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COMBINED CATALOG


Volume One

College Park

University of Maryland

1961 - 1962





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COMBINED CATALOG

Series 1961-1962

Volume One

COLLEGE PARK
UNIVERSITY OF MARYLAND

The 1961-1962 Series of University of Maryland Catalogs is published in a two-volume set of combined catalogs. Volume One contains catalogs pertaining to academic units located on the College Park Campus. Volume Two contains catalogs pertaining to academic units located on the Baltimore Campus. This is Volume One.

Catalogs in this volume are located
in this order:

Adventure in Learning
(General Information)

College of Agriculture

College of Arts and Sciences

College of Business
and Public Administration

College of Education

College of Engineering

College of Home Economics

College of Physical Education,
Recreation and Health

Department of Air Science

Graduate School Announcements

Summer School

University College

UNIVERSITY OF MARYLAND

BULLETIN

VOLUME 15

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in
Learning

1961-1962

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IMPORTANT NOTICE

THE STATEMENTS IN THIS BOOKLET ARE FOR INFORMATION ONLY. The provisions of this publication *do not* form a contract between the student and the University of Maryland.

Official notice concerning student life, grading systems and other regulations are to be found in the publication *General and Academic Regulations*, made available to all incoming students.

The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

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THIS PUBLICATION EXPLAINS HOW YOU MAY TAKE ADVANTAGE OF the opportunity for a quality education at moderate cost through the programs and facilities of your State University.

The key to your future lies in your own hands. The University of Maryland exists to help you to develop your particular talents and capabilities to the maximum degree.

At College Park and at Baltimore, the faculties and staff serve the citizens of the State through eight undergraduate colleges, a graduate school, and six professional schools.

We welcome your inspection of our program and urge you to visit the **campus** when you have an opportunity.

Wilson H. Elkins

DR. WILSON H. ELKINS
President of the University

To the Applicant for Admission

THIS BOOKLET IS THE ALL-PURPOSE, GENERAL INFORMATION BOOKLET OF THE University.

It contains the information you need

- ▶ to arrange your high school curriculum for acceptance by the various colleges of the University
- ▶ to select a course of study at the University
- ▶ to apply for admission
- ▶ to matriculate

Adventure in Learning also covers fees and expenses, housing, scholarships and loans.

The course catalog of the College of your choice will be made available to you after you enter the University.

OR

You may consult reference copies in your high school library, principal's office or office of the guidance counselor. Course catalogs usually require interpretation for new freshman students and should, therefore, be used in consultation with the high school guidance counselor or principal.

Professional school catalogs are available by writing to the office of the appropriate dean on the Baltimore campus.

Prospective part-time and evening adult education students may obtain the appropriate course catalog or brochure by writing to the Director, University College, Skinner Building, University of Maryland at College Park.

Prospective graduate students may obtain the Graduate Catalog by writing directly to the Dean of the Graduate School, Skinner Building.

Prospective summer students may write to the Director of the Summer Session for copies of the Summer Session bulletin—usually available after April 15.

The University Heritage

FEW INSTITUTIONS OF HIGHER LEARNING IN THE UNITED STATES HAVE HAD as rich and proud a history as the University of Maryland. Students admitted will find the institution stressing programs of educational excellence, vital research, and important service to the community.

Just 31 years after the signing of the Declaration of Independence, there was established in Baltimore a College of Medicine, the fifth such medical school in the United States. The College began with no visible assets save determination, enthusiasm and skill, and the first seven students enrolled received their lectures in the homes of their professors. One member of the faculty, Dr. John Shaw, died as a result of exposure suffered while working winter nights in a delapidated structure that was the college's home in 1808. The other two members of the faculty, Dr. John Beal Davidge and Dr. James Cocke, were extremely skillful

researchers—professionally outstanding in that day and even more so from the perspective of today.

Under an 1812 act of the State Legislature, the College of Medicine of Maryland was authorized to appoint and annex to itself three other colleges and faculties: the Faculty of Divinity, the Faculty of Law, and the Faculty of Arts and Sciences. These four colleges became known as the University of Maryland. In the ensuing years, the departments of Dentistry and Pharmacy as well as the Training School for Nurses were created under the College of Medicine. Still, in 1907, on the University's one hundredth birthday, no affiliated College of Arts and Sciences had been established.

Meanwhile, on the old Ross Borough Estate, south of Baltimore near Washington, D. C., another institution, the Maryland Agricultural College, was developing.

AS THE RESULT OF INTEREST GENERATED BY A GROUP OF FAR-SIGHTED Maryland farmers, "an act to establish and endow an agricultural college" had been passed by the State Legislature in 1856, creating the second such institution established in the Western Hemisphere. In 1862 the College became a land-grant institution under an act of the United States Congress. In 1920, by an act of the State Legislature, the University of Maryland (Baltimore) was merged with the Maryland State College of Agriculture (College Park) and the combined institutions were given the name University of Maryland.

This, of course, forms only the briefest outline of the 150-year history of the University.

Although the University is a State institution quite large in physical plant, student enrollment, the number of courses and degrees offered, and services performed, its objectives remain constant and form a base for all educational activity. Simply stated they are: (1) to prepare students in the arts, the humanities, the pure and applied sciences, agriculture, business and public administration, home economics, industry, and for the professions; (2) to contribute to the civic, ethical, moral, cultural, spiritual, and general welfare; (3) to provide general education in its broadest sense, both formal and informal, for all students who enroll; (4) to develop those ideals and finer relationships among students which characterize cultured individuals; (5) to conduct systematic research and to promote creative scholarship; and (6) to offer special, continuation, and extension education in communities where it is feasible.

The government of the University is vested in a Board of Regents, each member of which is appointed by the Governor of the State to serve a term of nine years. The administration of the University is vested in the President. The following is a listing of the major administrative divisions on both campuses:

AT COLLEGE PARK

College of Agriculture
College of Arts and Sciences
College of Business and Public Administration
College of Education
College of Engineering, the Glenn L. Martin Institute of Technology

College of Home Economics
Department of Air Science
College of Physical Education, Recreation and Health
University College (formerly College of Special and Continuation Studies)

Agricultural and Home Economics
Extension Service

Graduate School
Summer School

Agricultural Services and Controls

Agricultural Experiment Station

AT BALTIMORE

School of Dentistry
School of Law
School of Medicine

School of Nursing
School of Pharmacy

School of Social Service
University Hospital

THE UNIVERSITY'S EDUCATIONAL AND RESEARCH PROGRAMS ARE ENHANCED by its participation in the activities of the Southern Regional Education Board. The SREB is a public agency supported by the states of Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. Through the agency of the SREB, these states work together for higher education and to improve the economy of the South.

Under the Regional Contract Program, the University of Maryland shares its facilities with other universities. For example, by 1959-60 Maryland will have provided veterinary medical training for its residents for 11 years for less than \$400,000, which figure is smaller than the annual operating budget of some veterinary schools. In the area of training in dentistry, the University of Maryland School of Dentistry is currently receiving about \$30,000 annually for accepting contract students from Florida and South Carolina, states which do not have schools of dentistry.

Maryland also participates in the SREB's Program of Institutional Cooperation in Subject Matter Fields, the Mental Health Training and Research Program, and other cooperative research and study programs.

You are the Vital Factor

WHERE DO YOU FIT IN? YOU ARE THE BASIC, VITAL FACTOR IN THE UNIVERSITY'S educational program. It is with you in mind that the citizens of this State (your parents) contribute toward the establishment of a well-equipped University. Much has been done to provide the means for you to acquire an excellent education. You will have an opportunity to fulfill this obligation by diligent application in your studies.

If you are a high school student, or graduate, you are trying, certainly, to decide (1) whether or not to spend the next four years of your life at a college or university and (2) which institution and which course of study is the right one for you.

First you should know that the administration and faculty of the University of Maryland will make every attempt to help you find the answers to these questions. Through personal counseling, letters, and transmittal of information dealing with the academic program, the University attempts to present to the prospective student as complete a picture of its activities as possible. The

University is willing to go all the way for you, both during your period of decision and (if accepted for admission) during your academic tenure. Now, here is what the University expects of you.

The University expects you to be a good student; it expects you to be a conscientious student. Even though the University is concerned with a large number of students, emphasis remains on the individual. An estimate of the value of the individual at the University was given recently by the President of the University, Dr. Wilson H. Elkins, in an address entitled "A Quantity of Quality."

During the last few decades we have been witnessing a social revolution with the individual as the center, and it is extremely important that this revolution have a clear objective. Otherwise, it could very easily result in a widespread conviction that every one should share and share alike the benefits of a free society regardless of the capacity, effort, initiative, and ambition. Among other things this would lead to the weakening of higher education by the admission and retention of all comers to the campuses of the colleges and universities, and the reduction of our program to a low common denominator. This would be a disservice to society. We must therefore strive to direct the revolution toward the recognition of individual differences while assuring each individual of the opportunity to go as far along various courses as his talents and energies will permit.

What Dr. Elkins has said is that there are wide and impressively deep educational opportunities offered to each individual at the University of Maryland, but it is up to each individual to prove his own worth and to develop his talents according to his own special capabilities. The University makes every attempt to maintain small, intimate classes and the teaching staff makes every attempt to provide individual guidance and instruction for each student.

WHEN YOU VISIT THE CAMPUS OF THE UNIVERSITY OF MARYLAND AT EITHER College Park or Baltimore, you will recognize a number of major construction projects at various stages of completion. In anticipation of greatly increased enrollments, this condition is expected to continue for at least another decade. At College Park, projects scheduled for completion in 1961 are a new building for the College of Business and Public Administration, a building for Foreign and Classical Languages, a renovation and addition to Taliaferro Hall to provide expansion for the College of Arts and Sciences and major additions to the Physics and Mathematics Buildings. A new Dormitory-Dining Hall development on the north side of the campus will provide housing for 500 men and 500 women students. A new University Health Service (Infirmary) has also been planned and major expansion of the Fire Service Extension facility whereby Civil Defense programs will be offered is being developed. A million and a half dollar addition to the existing Student Union will provide greatly increased day student food service, bowling alleys, auditorium and meeting rooms for student organizations. Planning funds were provided by the 1960 legislature for a major Classroom Building with a University Auditorium attached. It is anticipated that the departments of Music, Speech and Art will occupy this proposed two and a half million dollar structure.

The University has at its disposal some 2,500 acres of land. The main campus at College Park encompasses about 300 acres with 800 additional acres adjacent to it available for agricultural research and teaching. At College Park there are seventy-eight principal buildings all designed in a Georgian Colonial style. On the Baltimore campus, located in the vicinity of Lombard and Greene Streets, are situated seventeen major buildings including the original School of Medicine building constructed in 1812, the Out-Patient Department, the University Hospital, the Psychiatric Institute, the Frank C. Bressler Building, the Dental School Building, Pharmacy School and Nursing School Buildings, the School of Law Building, the Gray Laboratory, and the recently acquired Hecht properties.

A modern Medical Sciences Library and the initial phase of a Student Union-Dormitory structure were completed on the Baltimore campus in 1960. In cooperation with the City of Baltimore and the Urban Redevelopment Program of the Federal government, the Baltimore campus is expected to grow from eight to twenty acres during the next decade. Planning is currently underway for a new School of Law Building and an Ambulatory Service facility which will be constructed early in this expansion program.

Admission to the University

NOW YOU WILL WANT TO ASK THIS QUESTION: WHO MAY BE ADMITTED TO the University?

The University says officially: "Admission from secondary school is based upon evidence indicating the applicant's probable success in the program of his choice."

By the word "evidence" the University means that:

- 1) You must be a graduate of an accredited secondary school;
- 2) Your principal or headmaster should recommend you for entrance to the University;
- 3) Your high school program should have provided you with the subjects required for the college and curriculum which you wish to enter.

Actually, during your high school years, you have been preparing for the University. You should have maintained a good scholastic record and planned your curriculum so that you will have at graduation the required number of units to begin your university program.

A graduate of an accredited secondary school in Maryland whose secondary record indicates probable success in the University will be admitted without examination, provided that his program has included the subjects required for the college and curriculum which he wishes to enter, and provided that he has a satisfactory general recommendation from his secondary school as to his character and ability.

All applicants for admission, who do not qualify as Maryland residents, as defined in the Appendix, must submit College Entrance Examination Board verbal and mathematical aptitude test results.

A graduate of an accredited secondary school of Maryland whose secondary school preparation has not included the subjects necessary for the college and

curriculum which he wishes to enter or whose academic performance has not been consistently satisfactory may be asked to take examinations to supplement his secondary school record.

Examinations are given at College Park at stated intervals during the year. On the basis of the applicant's secondary school record and his performance on the examination, he may be given a regular admission or he may be admitted on a trial status.

Pre-college Summer Session

Over the years the University of Maryland, as the State University, has admitted Maryland residents to the University upon their graduation from high school. Students with low achievement records in high school have been given a conditional admission status referred to as "on trial." Experience has proved that students who do below average work in high school are not likely to succeed in college unless they improve their study habits and learning techniques. Students of this status usually need special assistance in determining whether they can do college level work.

Beginning in the summer of 1961, all entering freshmen who are admitted on the on-trial status will be required to attend a six-week summer session (June 26 through August 4, 1961), preceded by a brief orientation period. During this summer session students will be required to take six credits of academic work, including English 1. The second course will be selected with the advisement of the director of the program. A special program of advisement and counseling as well as reading and study skills instruction will be provided to all on-trial students. Alternative to this special session and the achievement required to remain in the University have been explained to high school principals and counselors.

Any Maryland resident whose high school average falls below the C level is likely to be given on-trial status. A final decision will depend upon the student's performance on tests administered by the University.

May 6, 1961 is the last date on which a potential on-trial student may enter his application for admission. His high school record, including the first semester of the senior year, must be received by this date. May 27, 1961 is the last testing date for students in this category

How about Mathematics?

Most programs in the University require some college work in mathematics. The student who plans to go to college should be sure to take College Preparatory Mathematics for two, three or four years. Some programs in the University, for example Engineering, require from three and one-half to four years of College Preparatory Mathematics.

Courses in General Mathematics, Commercial Mathematics, and Shop Mathematics are not considered as College Preparatory Mathematics.

How about English?

A considerable portion of the work in English during the freshman year at the University is devoted to expository writing. The high school student should therefore get as much preparation as possible in composition. The student who passes the English Classification test in the top fifteen percent of his entering class will be placed in an advanced English grouping.

Where do you apply?

The Office of Admissions is chiefly responsible for advising prospective students prior to application for admission and for processing applications when submitted. All inquiries concerning undergraduate work, therefore, should be submitted to:

DIRECTOR, OFFICE OF ADMISSIONS
NORTH ADMINISTRATION BUILDING
UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND

In your first letter of inquiry you should state your educational background and your expected date of graduation from secondary school, your educational objectives, and the date of your expected entrance to the University. You should request application forms for admission and housing. It is not essential that you receive a course catalog for the College in which you are interested prior to your registration.

Your completed forms, accompanied by a \$10 application fee, should be returned to the Office of Admissions as soon as possible after your mid-year grades are available, assuming you are making application while a high school senior. The fee should be in the form of a check made payable to the University of Maryland and is non-refundable under any circumstance. The fee will be applied in lieu of the matriculation fee provided the applicant enrolls for the term applied for on his application. Applicants who have been enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

The Transfer Student

A student must be in good standing as to scholarship and character to be eligible for transfer to the University. Advanced standing is assigned to a transfer student from an accredited institution under the following conditions: (1) A minimum of one year of resident work or not less than 30 semester hours (including the meeting of all University and curricular requirements) is necessary for a degree; (2) The University reserves the right to make the assignment of transfer credit conditional upon the student's making a satisfactory record during his first semester at the University; (3) The University reserves the right to revoke advanced standing if the transfer student's progress is at any time unsatisfactory.

The Special Student

An applicant who is at least twenty-one years of age, and who has not completed the usual preparatory course, may be admitted to such courses as he seems qualified to take. A special student is ineligible to matriculate for a degree until he has satisfied the entrance requirements.

The Unclassified Student

An applicant who meets entrance requirements but who does not wish to pursue a program of study leading to a degree is eligible for admission to enroll in courses for which he has the prerequisites.

The Foreign Student

The foreign student applying for admission to the undergraduate schools of the University of Maryland should make application at least three months in advance of the term for which he is applying. He will be required to submit an application for admission on a form furnished upon request by the Admissions Office of the University and official copies of his secondary school preparation, certificates of completion of state secondary school examinations, and records of college or university studies completed in schools in the United States or elsewhere. He will also be required to furnish proof of his ability to read, write, speak, and understand English sufficiently well to pursue satisfactorily an approved course of study in one of the Colleges of the University. Arrangements can be made for administering an English test to prospective students both in the United States and in countries abroad.

The foreign student accepted for admission to the University will receive from the Director of Admissions the Immigration I-20 form needed to secure a student visa from the American consul.

Every foreign student is expected to see the Foreign Student Adviser as soon as possible after arrival at the University. The office of the Adviser is located in the North Administration Building, Room 223.

When do you enter ?

New students should plan, if possible, to enter the University at the beginning of the fall semester. Application should be filed not later than August 15 for the fall semester and January 1 for the spring semester. If a student does not apply by these dates it may not be possible to process his application even if his records and recommendations are acceptable. These dates apply to students who qualify for regular admission status.

Musts—Physical Education Training and Air Force ROTC Instruction

THE UNIVERSITY IS CONCERNED WITH THE PHYSICAL FITNESS OF EACH student. Therefore, all undergraduate men and women students, classified academically as freshmen or sophomores registered for more than six semester hours of credit, are required to enroll in and successfully complete four prescribed courses in Physical Education for a total of four semester hours of credit. These courses must be taken by all eligible students during their first two years of attendance at the University whether they intend to graduate or not. A health sequence of two courses is required of all undergraduate women.

The University operates one of the largest Air Force Reserve Officer Training Corps units in the United States. Successful completion of the required two-year course is prerequisite for graduation. The course must be taken during the first two years of attendance. Those students interested in a career in the Air Force, and who have not yet reached their 25th birthday at the time of initial enrollment in any undergraduate or graduate curriculum, may apply for advanced training in the Air Force Reserve Officer Training Corps upon satis-

factory completion of the basic requirements. Successful completion of this advanced training course, and attainment of a baccalaureate degree leads to a commission in the United States Air Force Reserve or a Certificate of Completion.

Bases for Exemption From Air Force ROTC Instruction

1. A student who has completed the basic program in other approved units of the United States Air Force, Army, or Naval ROTC will receive credit.

2. A student holding a commission in the Reserve Corps of the Army, Navy, Marine Corps, Coast Guard, or Air Force will receive credit.

3. A student who has served in the Army, Navy, Marine Corps, Coast Guard, or Air Force for a period of time long enough to be considered equivalent to the training received in the basic AFROTC program will receive credit. Short periods of service in any of the branches named above will be evaluated and allowed as credit toward completion of the course.

4. Graduate students are exempt.

5. A student classified as a "special student" who is registered for less than seven semester hours is exempt.

6. A student who is 24 years of age or older on or before the first day of scheduled classes for the semester will not be required to initiate or continue his basic AFROTC registration. He may start or continue AFROTC at his own option.

A student who for reason of age does not satisfy in whole or in part the basic AFROTC program will be required to pass an equivalent number of credits, presently within the pattern of the American Civilization Program, in addition to the basic American Civilization Program, and in addition to the curriculum requirements of his program of studies and/or college.

The intent of this plan is to give the over-age student an alternative to basic AFROTC, using five semesters of academic credit as the measure of the alternative. It is expected that the courses used as options will advance the same citizenship education purpose as is associated with basic AFROTC.

Any course used as an alternative to AFROTC will require the approval of the dean of the school or college from which the student is graduating and it must be taken at the University of Maryland. Preference will be given to advanced courses in history, government and politics, and English. If a proposed course selection falls outside the pattern of the American Civilization Program prior approval must be given by the Vice President for Academic Affairs.

7. A student who is physically handicapped may exercise the same option as an over-age student. The physical handicap must be verified by the Director of Student Health. It is expected that many physically handicapped persons will prefer basic AFROTC. They are acceptable in basic AFROTC as they were under former regulations.

8. A student who transfers to the University with advanced standing equivalent to junior status or higher may pursue basic AFROTC semester by semester until graduation (or for four semesters) as permitted in the past, or he may exercise the option outlined for over-age students. The number of additional semester hours of academic credit for which the transfer student will be held

is five if he is on campus for four semesters and three credits for any period less than four semesters.

9. A verified conscientious objector may exercise the five-semester-hour-equivalent option. The criterion for determining this status shall be the same as that used in administering the Universal Military Training and Service Act. Minors must obtain the signature of their parents to exercise this alternative. If the conscientious objector falls into any other category of alternatives (over-age, physically handicapped, transfer at junior level) he may give precedence to the other category.

10. A foreign student, other than one with an immigrant visa, is exempt. He may choose the alternative described previously if he falls in any of the categories to which the alternative applies.

Where Will I Live?

Dormitories

ROOM RESERVATIONS. If you desire to room in a dormitory, you should request room application cards by so indicating on your application for admission. The Director of Admissions will refer these applications to the office of the Director of Housing. Application cards or blanks will be sent to you and should be promptly returned to the proper office. A fee of \$25.00 will be required, which will be deducted from the first semester room charges when the student registers. A room is not assured until you receive acknowledgment from the Director of Housing. If you do not claim your room on your proper registration day, the reservation will be cancelled. You may hold a room by special request until after classes begin providing you notify the housing office by the first day of registration. If you desire to cancel your room reservation, fees will not be refunded if your cancellation notice is received later than July 15 for the first semester.

Applications for rooms are acted upon only when you have been fully admitted academically to the University.

All undergraduate women except those who live at home or with close relatives are required to room in the University dormitories. (If an undergraduate woman is 21 years of age or over at the time she applies for admission she may be referred to off-campus housing.) All male freshmen except those who live at home or with close relatives are required to room in the University dormitories when accommodations are available.

New students are urged to attend to their housing arrangements at least three months in advance of registration. It is understood that all housing and board arrangements which are made for the fall semester are binding for the spring semester.

Room and board charges begin with the evening meal prior to the first day of the registration period and include the last day of classes for each semester, with the exception of the Christmas recess and the Easter recess. If you are unable to make other arrangements for the holidays you may consult the Dean of Men or the Dean of Women for assistance.

Equipment. You should bring with you sufficient single blankets, sheets, pillow cases, towels, a pillow, a laundry bag, a waste paper basket and a study lamp. Each student assumes responsibility for all dormitory property assigned to him. Any damage done to the property, other than that which results from ordinary usage, will be charged to the student concerned. Where individual responsibility for damage cannot be ascertained, the amount of the damage will be prorated among the occupants of the room or dormitory in which the damage occurred.

You will be furnished with a key for your room, for which a deposit of \$1.00 will be made. The deposit will be returned in exchange for the key at the end of your stay at the University dormitory.

Laundry. The University does not provide laundry service. You are responsible for your own laundry. There are several reliable laundry concerns in College Park, or if you prefer, you may send your laundry home. It is also possible to make arrangements to rent towels and bed linens. You may do laundry (not including bed linens) in the laundry rooms which are located in each dormitory.

Personal Baggage. Baggage sent via the American Express and marked with the college housing address will be delivered when you notify the College Park Express Office of your arrival.

Off-Campus Housing

Only upperclass and veteran male students are allowed to live in houses off the campus. A list of "off campus" rooms is available in the Office of the Dean of Men. All housing arrangements for undergraduate women students must be approved by the Office of the Dean of Women. Most of the "off-campus" houses have double rooms with twin beds and provide linens and towels. Some require that you furnish your own bed linens. The price for a person in a double room is about \$25.00 a month.

Meals

Those of you who live in University dormitories must have your meals at the University Dining Hall, where three meals are served daily and two on Sunday. (No special diets will be furnished.)

Others may make arrangements to board by the semester at the Dining Hall. If you live off campus, lunches on school days may be obtained at the University cafeteria; lunches, breakfast and Sunday suppers may be obtained at the Student Union. There are also eating establishments available in College Park.

No rebate is made for meals not eaten at the University Dining Hall or in other places where board is paid for in advance.

How Much Will It Cost?

THE TABLE FOLLOWING ON THE NEXT PAGE PRESENTS ESTABLISHED CHARGES for attending the University of Maryland in the undergraduate programs offered on the College Park campus.

Fees for Undergraduate Students, Maryland Residents	First Semester	Second Semester	Total
FIXED CHARGES	\$ 92.00	\$ 93.00	\$185.00
INSTRUCTIONAL MATERIALS FEE	12.00	12.00	24.00
ATHLETIC FEE	20.00*	...	20.00
STUDENT ACTIVITIES FEE	12.00	...	12.00
SPECIAL FEE	15.00*	...	15.00
RECREATIONAL FACILITIES FEE	25.00*	...	25.00
INFIRMARY FEE	5.00	...	5.00
ADVISORY AND TESTING FEE	5.00	...	5.00
Total for Residents	\$186.00*	\$105.00	\$291.00*
Residents of the District of Columbia, Other States and Countries			
TUITION FEE FOR NON-RESIDENT STUDENTS	\$150.00	\$150.00	\$300.00
Total for Non-Residents	\$336.00*	\$255.00	\$591.00*
Board and Lodging			
BOARD	\$200.00	\$200.00	\$400.00
DORMITORY ROOM			
MARYLAND RESIDENTS	105-120	105-120	210-240
OTHER STATES AND COUNTRIES	130-145	130-145	260-290

For complete information concerning fees see Appendix A.

Can You Work Your Way Through College?

A number of students are employed on a part-time basis by the University, others work in various capacities in shops and stores located in the College Park area. If you seek employment while pursuing a regular program of instruction, you should consult the Office of the Dean of Men who maintains a listing of available jobs within the University and in nearby commercial areas. Holiday and summer employment for undergraduates as well as full-time career employment for graduating seniors and alumni are available through the University Placement Service. The Placement Service also maintains a guidance and information service relative to full-time career employment. This assistance is on a non-fee basis.

How About Grants and Scholarships?

For promising young men and women who might not otherwise be able to provide themselves an opportunity for higher education, a number of grants and scholarships are available. All requests for information concerning these awards should be directed to:

DIRECTOR, STUDENT AID
UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND

* Effective July 1, 1961.

In deciding whether you are eligible to receive a grant or a scholarship, the Committee considers such qualifications as leadership, character, achievement, and participation in student activities, as well as academic ability and financial need.

You should know of the five major groupings of grants and scholarships. These are:

FULL UNIVERSITY SCHOLARSHIPS—covering board, lodging, fixed charges, fees and books;

UNIVERSITY GRANTS—awarded to deserving and qualified secondary school graduates covering fixed charges only;

GENERAL ASSEMBLY GRANTS—for fixed charges only, awarded by members of the State Legislature, three for each Senator and one for each member of the House of Delegates, only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents;

SPECIAL ACADEMIC SCHOLARSHIPS—awarded to students of exceptional academic ability by the Committee on Scholarships and Grants-in-Aid;

ENDOWED SCHOLARSHIPS AND GRANTS—supported by income from funds especially established for this purpose.

Are Loans Possible?

Several loans are made available by private organizations to worthy students in financial need.

The American Bankers' Association Loan Fund provides loans of \$250 for one year only to senior or graduate students who are emphasizing Banking, Economics, or related subjects.

Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

Under provisions of the National Defense Education Act, loans are available to qualified students in amounts not to exceed \$1000 per year.

Extracurricular, Social and Religious Life

ORGANIZED STUDENT ACTIVITIES ARE RECOGNIZED AND ENCOURAGED
Opportunities are open in student government, fraternities, sororities, clubs, civic and service organizations, subject matter organizations, and recreational organizations. You may be interested in joining the band or the staff of one of the student publications. You may be interested in athletics or perhaps you will want to become a member of a club or society which has a primary interest in the informal investigation of an academic specialty.

The Student Government Association represents all students and operates under an approved constitution and by-laws. The Associated Women Students, in cooperation with the Dean of Women, is concerned with matters pertaining to women students. The Men's League, in cooperation with the Dean of Men, is concerned with matters pertaining to men students.

The University Band is under the supervision of the Department of Music and is composed of four groups: the Marching Band, the Symphonic Band, the Air Force ROTC Band, and the Pep Band. Membership is open to all registered students who meet the requirement of audition.

Five student publications are published with faculty guidance and the general supervision of the Committee on Student Publications and Communications. They are: *The Diamondback*, the campus newspaper; *The Terrapin*, the student yearbook; *The Old Line*, a magazine of humor, literature and art; *The M Book*, the student handbook; and *Expression*, campus literary magazine.

Athletics and Recreation

The University recognizes the importance of the physical development of all students and, in addition to the required physical education for freshmen and sophomores, sponsors a comprehensive intercollegiate and intramural program. Students are encouraged to participate in competitive athletics and to learn the skill of games that may be carried on after leaving college. The intramural program, which covers a large variety of sports, is conducted by the Physical Education Department for both men and women.

The Council on Intercollegiate Athletics sponsors and supervises a full program of intercollegiate athletics in every form necessary to meet the needs of the student body. By keeping this program in proper bounds, it becomes an incidental feature of University life. Each student is encouraged to participate in the program, either as an athlete or as a spectator. A strong intercollegiate program creates the incentives for extensive participation in the intramural program and, further, the program furnishes a rallying point of common interest for students, alumni, and faculty.

The University is a member of the Atlantic Coast Conference, the National Collegiate Athletic Association, the United States Intercollegiate Lacrosse Association, the Intercollegiate Amateur Athletic Association of America, and cooperates with other national organizations in the promotion of amateur athletics.

The University has an activities building which contains a modern gymnasium, a swimming pool, training facilities for indoor sports, physical education laboratories, and an arena; also a large armory; a modern stadium with a running track; a number of athletic fields; tennis courts; golf course; baseball diamonds; and a gymnasium and swimming pool for women.

To Round Out Your Experience

Many clubs and societies, with literary, art, cultural, scientific, social, and other special objectives function at the University. Some of these are strictly student organizations; others are conducted jointly by students and members of the faculty.

To round out your college experience there are many social functions occurring throughout the year. Formal dances are presented by each of the classes and there is the Homecoming Dance each November. In addition, various clubs, sororities, and fraternities have smaller parties taking place throughout the year. Dormitories sponsor exchange desserts and open houses from time to time. For freshmen there is an extensive Orientation Week program which includes a number of social events, designed to acquaint new students with each other and with the University.

The All-Faith Memorial Chapel is one of the most beautiful structures of its kind in the nation. Within its shelter are housed the offices of chaplains, representing the major denominational bodies, and there are many opportunities

for you to consult with the minister of your faith. Chances are that you will want to join a religious club such as the Canterbury Association (Episcopal), Channing Fellowship (Unitarian), Christian Fellowship (non-denominational), Christian Science Club, Hillel Foundation (Jewish), Lutheran Students Association, Newman Club (Roman Catholic), Westminster Foundation (Presbyterian), and the Wesley Foundation (Methodist).

Academic Standards

THE STUDENT WHO MAINTAINS AT LEAST A "C" AVERAGE IN ACADEMIC SUBJECTS is proceeding satisfactorily toward graduation. The student who does not maintain this average is falling behind.

The student who fails fifty percent or more of his academic work will normally not be permitted to continue. Special provisions, however, are made for the student who has difficulty in the first semester of his freshman year. The student who fails more than 35% of his academic work in any semester or who fails to make a minimum 1.5 average for the academic year will be placed on academic probation. Each student must earn junior standing within a specified time in order to be eligible to continue in the University.

The regulations governing junior standing, academic probation, and academic dismissal are printed in a separate publication, *University General and Academic Regulations*. Every student should familiarize himself with these regulations. The student who is granted a trial admission will find in this publication a statement of the special rules applicable to students who have been granted this conditional admission.

Special Services

Student Health

The University recognizes its responsibility for safeguarding the health of its students. All new undergraduate students are required to undergo a thorough physical examination prior to their registration. A well-equipped infirmary is available for the treatment of sick or injured students, and a nurse is on duty at all hours.

All dormitories, off-campus houses, sorority and fraternity houses are inspected periodically by the Student Health Service to make certain that proper sanitary conditions are maintained.

Group Accident Insurance, issued by a national company, is available to students on a voluntary basis.

Counseling Services

The services of three offices are available for counseling and guidance: the Office of the Dean of Men, the Office of the Dean of Women, and the University Counseling Center which provides individual assistance concerning vocational choice, personal problems and personal educational progress.

The Counseling Center is staffed by a well trained group of counseling psychologists. Psychiatric and other medical consultation is available if needed.

As part of its program, the Counseling Center operates a Reading and Study Skills Laboratory for students having difficulties in reading or studying effectively. In the laboratory, students typically meet in small groups set up to deal with common problems. Individual problems are also the concern of the Center.

University Post Office

The University operates an office located in the Service Building, for the reception and dispatch and delivery of the United States mail, including parcel post items and inter-office communications. This office is not a part of the U. S. postal system and no facilities are available for the reception or transmission of postal money orders and all registered and insured mail must be picked up at the United States Post Office in the City of College Park. The campus post office hours are 8:30 a.m. to 4:00 p.m., Monday thru Friday. Resident students mail will be delivered directly to the dormitories. All communications addressed to non-resident and/or commuting students must be mailed to their home address as there is no provision in the University Post Office for handling mail for these students.

The Student Union

It is the University policy to assign meeting space in the Student Union Building, as far as it is practical to do so, for all student and faculty organizations. This building has available a total of 9 meeting rooms varying in capacity from 25 to 300. No charge will be made for any student or faculty organization on the College Park campus that wishes to meet in the Student Union.

Special charges for dances and other extra services may be necessary. Located in the building are lounges for relaxation or study, television rooms, music lounge with a record library, billiard room, coffee shop, tobacco shop, student supply store and campus post office.

The Program in American Civilization

IN THIS MODERN ERA OF IDEOLOGICAL CONFLICT, WITH THE PRESENCE OF totalitarian systems and their cynical philosophies, the University considers it important for every student to achieve an appreciative understanding of his country, its history and its culture. It has therefore established a comprehensive program in American Civilization to provide the student with a general educational background which is the rightful heritage of every American citizen.

Work in American Civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University. The second level is for undergraduate students wishing to carry a major in this area. The third level is for students desiring to do graduate work in this area. Majors in American Civilization should obtain a catalog for the College of Arts and Sciences, and graduate students should obtain a catalog for the Graduate School from offices of the respective deans upon the student's arrival on campus.

The University of Maryland takes pride in its rich and colorful past, its tradition of tolerance, and its constant dedication to the ideals on which the American Republic was founded. It attempts, through the American Civilization Program, to pass on this common heritage to each of its students.



COLLEGE OF AGRICULTURE

THE COLLEGE OF AGRICULTURE OFFERS STUDENTS A BROAD EDUCATIONAL program designed to prepare them for careers in the agricultural sciences, agricultural technology or agricultural business. All four-year programs lead to the Bachelor of Science Degree.

The formal educational program for students in Agriculture includes courses in the basic physical, biological and social sciences and in the liberal arts as well as in the agricultural sciences.

The agricultural sciences embrace the application of the physical, biological and social sciences to the solution of agricultural problems. Agricultural technology is related to the farm operation and to the manufacturing and processing industries associated with agriculture. These include the manufacture of chemicals used as pesticides, farm machinery, feed, fertilizer and other products used for farm production and in the industries where farm produced foods are processed and packaged for consumption. Agricultural business opportunities are found in the marketing of farm products, and in areas rendering services required to meet production needs. Numerous other business opportunities occur in the financing, merchandising and transportation fields.

The program designed to prepare students to teach vocational agriculture in the high schools or to enter extension work is available in the College of Agriculture.

The curriculum in Agricultural Engineering is a program applying the basic engineering sciences in agriculture.

Pre-professional programs are offered for those students who wish to prepare for the study of professional forestry, the rural ministry or veterinary medicine.

A Two Year Program in Agriculture is available for students who desire two years of specialized study in the field of Agriculture.

PROGRAMS IN AGRICULTURE

AGRICULTURE-GENERAL
 AGRICULTURAL CHEMISTRY
 AGRICULTURAL ECONOMICS
 AGRICULTURAL AND EXTENSION EDUCATION
 AGRICULTURAL ENGINEERING
 AGRONOMY (CROPS AND SOILS)
 ANIMAL HUSBANDRY
 BOTANY
 DAIRY (DAIRY HUSBANDRY AND DAIRY TECHNOLOGY)
 ENTOMOLOGY
 HORTICULTURE (FRUITS AND VEGETABLES, FLORICULTURE AND ORNAMENTAL
 HORTICULTURE AND FOOD PROCESSING)
 POULTRY

LABORATORY

Up-to-date laboratory facilities are provided for effective instruction in plant and animal sciences and related fields in agriculture. Research facilities provide an additional opportunity for effective instruction.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER

English
Government & Politics
R. O. T. C. (men)
Health (women)
Agriculture
Botany
Agricultural electives
Physical Activities

SECOND SEMESTER

English
Sociology, Philosophy or
Psychology
R.O.T.C. (men)
Health (women)
Zoology
Agricultural electives
Physical Activities

RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i>	<i>4 units</i>
<i>Mathematics (College Preparatory)</i>	<i>2 units</i>
<i>(Algebra 1 unit and Plane Geometry 1 unit—Agricultural Engineering and Agricultural Chemistry require 2 additional units)</i>	
<i>Biological and Physical Sciences</i>	<i>3 units</i>
<i>History and Social Sciences</i>	<i>2 units</i>

Two units of foreign language are recommended for students in Agricultural Engineering, Agricultural Chemistry, Botany and Entomology.



COLLEGE OF ARTS AND SCIENCES

BACHELOR OF ARTS

THE COLLEGE OF ARTS AND SCIENCES OFFERS ITS STUDENTS A LIBERAL education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit, but of genuine personal satisfaction. The programs combine liberal education with special concentration in one or more of the basic intellectual or artistic disciplines.

A liberal arts education is the normal preparation for the student who plans to go to law school; to a post-graduate or professional school of business administration, library science or social service; or to a theological seminary.

The student interested in research (business and industry, government, university) and in college teaching will receive the undergraduate preparation necessary for the graduate work required in these fields.

By including the appropriate courses in education, a student in many of these areas can qualify for public school teaching. For students interested in foreign service, the foreign area programs combine intensive study of a language with study of the civilization of the area. Other special fields in business and government are open to the student who completes a liberal arts education with a suitable concentration in a single field of study.

Specialized programs are also offered in the fine arts (art, drama, music) and in speech therapy.

FOUR YEAR BACHELOR OF ARTS DEGREE PROGRAMS

American Civilization
*Art***
Comparative Literature
*Economics**
English
Foreign Area Studies (French, German, Latin American, Russian, Spanish)
French
*Geography**
German
*Government and Politics**
Greek
History
Latin
Music (see also Bachelor of Music degree)
Philosophy
Psychology
Russian
Sociology (including also a program in Crime Control)
Spanish
Speech (including also programs in Dramatic Art and in Speech Therapy)

* Programs in these fields are also offered in the College of Business and Public Administration.

** A program in Practical Art is offered in the College of Home Economics. A student may also earn a degree in Art Education.

PRE-LAW. A three year program, followed by three years of Law at the University of Maryland Law School, leads to the A. B. and LL.B. degree. Pre-law students may also follow any of the four-year programs and earn the Bachelor of Arts degree before entering law school.

BACHELOR OF MUSIC. Four year program leading to the Bachelor of Music degree. Professional training in theory-composition, history-literature, and applied music (voice or instrument).

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

Typical program for the freshman year for students following a program leading to the Bachelor of Arts degree:

FIRST SEMESTER

English
Science or Mathematics
Foreign Language
Sociology or Philosophy
Public Speaking
R. O. T. C. (men)
Health (women)
Physical Activities.

SECOND SEMESTER

English
Science or Mathematics
Foreign Language
American Government
Public Speaking
R. O. T. C. (men)
Health (women)
Physical Activities

RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i>	4 units
<i>Mathematics</i>	3 or 4 units of College Preparatory Mathematics
<i>Biological and Physical Sciences</i>	1 or more units
<i>History and Social Sciences</i>	1 or more units
<i>Foreign Languages and Latin</i>	2 or more units

BACHELOR OF SCIENCE

THE PROGRAM IN EACH OF THE SCIENCE FIELDS COMBINES LIBERAL EDUCATION with a concentration in one of the basic sciences or in mathematics. The graduates of these science programs are prepared for specialized positions in industry and government.

The student in these science programs can also gain the preparation necessary for admission to the professional schools of medicine and dentistry or for admission to graduate work leading to advanced degrees in Mathematics, Chemistry, Physics, and the Biological Sciences. Research work (industry, government, university) and college teaching are among the possibilities open to the student who successfully completes an undergraduate and graduate program in mathematics or one of the basic sciences.

FOUR YEAR BACHELOR OF SCIENCE DEGREE PROGRAMS

*Botany**
Chemistry
Mathematics
Microbiology
Physics
Psychology
Zoology
General Biological Sciences
General Physical Sciences

* A curriculum in Botany is also offered in the College of Agriculture.

PRE-MEDICAL AND PRE-DENTAL PROGRAMS. A three-year program meeting minimum requirements for medical school or dental school. A four-year program in any of the major fields in the College of Arts and Sciences leading to an A. B. or B. S. degree.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER

English
Mathematics
*Science (one or more of the
introductory courses)*
Sociology or Philosophy
R. O. T. C. (men)
Health (women)
Physical Activities

SECOND SEMESTER

English
Mathematics
Science (continued)
American Government
Public Speaking
R. O. T. C. (men)
Health (women)
Physical Activities

For the pre-medical and pre-dental student . . .

FIRST SEMESTER

English
Mathematics
Chemistry
Zoology
R. O. T. C. (men)
Health (women)
Physical Activities

SECOND SEMESTER

English
Mathematics
Chemistry
Zoology
R. O. T. C. (men)
Health (women)
Physical Activities

RECOMMENDED PREPARATION IN HIGH SCHOOL

English	4 units
Mathematics	4 units of College Preparatory Mathematics
Biological and Physical Sciences	1 or more units, including Chemistry and Physics, if possible
History and Social Sciences	1 or more units
Foreign Languages and Latin	2 or more units





COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

FOUR YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE ARE offered by the College of Business and Public Administration in the following fields:

BUSINESS ORGANIZATION AND ADMINISTRATION. The curriculums of the Department of Business Organization and Administration emphasize the principles and problems of the development and the use of policies and organizations, and the methods, techniques and procedures of execution—in other words, the essence of Administration and Management. The program of study for any individual student may be so arranged as to meet the needs of those preparing for specific lines of work such as accounting, advertising, banking, foreign trade, industrial administration, marketing administration, personnel administration, transportation, office management, real estate practice, insurance, journalism, public relations, government employment, office techniques, teaching and research.

ECONOMICS. The program of studies in the field of Economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the Social Studies.

FOREIGN SERVICE AND INTERNATIONAL RELATIONS. If the student expects to enter the foreign service, he should be well grounded in the language, geography, history, and politics of the region of his anticipated location as well as in the general principles and practices of organization and administration. It should be recognized that only a limited training can be secured during the undergraduate program.

GEOGRAPHY. This curriculum is designed to aid the student in securing the facts concerning the major geographical areas of the world and in studying and analyzing the manner in which these facts affect economic, political, and social activities. The student interested in international trade, international political relations, diplomacy, overseas governments, and national aspirations will find the courses in this department of great practical value.

GOVERNMENT AND POLITICS. The Department of Government and Politics offers course work designed to prepare students for government service, politics, foreign assignments, and intelligent and purposeful citizenship. If desired, students may specialize in international relations, foreign governments, public administration, public law, public policy, political theory, state and local government and administration, or a combination of these fields.

JOURNALISM AND PUBLIC RELATIONS. The Department offers two professional majors: one in editorial journalism, for those who seek beginning news jobs upon graduation; the other in public relations, for those who plan to work in public relations, in public information, or on company publications.

OFFICE MANAGEMENT AND TECHNIQUES. The purpose of the curriculums is not only to furnish merely technical or vocational training, but also, to aid the student in developing his natural aptitudes for secretarial and administrative positions. The development of the student's capacity to plan, organize, direct, and execute is the guiding principle followed in these curriculums.

The teaching staff and the curriculums of the College of Business and Public Administration have been selected and organized for the purpose of providing a type of professional and technical education that will aid the capable and ambitious student in developing his potential talents to their full capacity.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER

English
Mathematics
Geography
Economics
Organization and Control
Government & Politics
Speech
R. O. T. C. (men)
Health (women)
Physical Activities

SECOND SEMESTER

English
Mathematics
Geography
Economics
Organization and Control
Sociology
Speech
R. O. T. C. (men)
Health (women)
Physical Activities

RECOMMENDED PREPARATION IN HIGH SCHOOL

In general, four units of English and one unit each of Social Studies and Natural Sciences are required. At least one unit of Algebra is required and one additional unit of Algebra or of Plane Geometry is desirable. While foreign language is desirable for a certain program, no foreign language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives.



COLLEGE OF EDUCATION

THE CURRICULUMS IN THE COLLEGE OF EDUCATION PROVIDE OPPORTUNITIES for persons to qualify for certification to teach in the public schools in the following subject matter areas and/or grade levels, except in the one instance noted which is a program preparing for positions of an educational nature in industry. These are four-year programs leading to a Bachelor of Arts or Bachelor of Science degree:

ACADEMIC EDUCATION (SECONDARY SCHOOLS). English, foreign languages, mathematics, social sciences, natural sciences, speech (minor only).

AGRICULTURAL EDUCATION (SECONDARY SCHOOLS. OFFERED BY THE COLLEGE OF AGRICULTURE)

ART EDUCATION (SECONDARY SCHOOLS)

BUSINESS EDUCATION (SECONDARY SCHOOLS)

CHILDHOOD EDUCATION (NURSERY SCHOOLS AND KINDERGARTEN BOTH PUBLIC AND PRIVATE)

ELEMENTARY EDUCATION (ELEMENTARY SCHOOLS; GRADES 1-6)

HOME ECONOMICS EDUCATION (SECONDARY SCHOOLS; VOCATIONAL OR GENERAL)

INDUSTRIAL EDUCATION (SECONDARY SCHOOLS; INDUSTRIAL ARTS OR VOCATIONAL-INDUSTRIAL EDUCATION)

EDUCATION FOR INDUSTRY (PREPARES STUDENTS FOR ENTRANCE INTO SUPERVISORY OR MANAGEMENT POSITIONS IN INDUSTRY)

MUSIC EDUCATION (ELEMENTARY AND SECONDARY SCHOOLS; VOCAL OR INSTRUMENTAL)

PHYSICAL EDUCATION AND HEALTH EDUCATION (SECONDARY SCHOOLS; PHYSICAL EDUCATION ALSO IN ELEMENTARY SCHOOLS)

Majors in English, social sciences, language, and art receive the B. A. degree. Majors in mathematics may receive either degree. Majors in all other fields receive the B. S. degree.

SPECIAL FACILITIES

The Institute for Child Study conducts child study programs and provides for the supervision of undergraduate students in the study of children as a part of their program in preparation for teaching. Modern equipped shops and classrooms in a new building house the Industrial Education Department. A nursery-kindergarten laboratory school provides for practical experience of students in childhood education. Schools in nearby areas offer rich opportunities for observation and student teaching.

I. TYPICAL PROGRAM FOR THE FRESHMAN YEAR

*For Students Preparing to Teach in Elementary Schools or
Nursery Schools and Kindergartens.*

FIRST SEMESTER

Eng. 1 Composition and American Literature
Soc. 1 Sociology of American Life or Phil. 1 Philosophy for Modern Man
Bot. 1 General Botany
Art 15 Fundamentals of Art (Elem. major)
A.S. 1 R.O.T.C. (men)
Health 2 Personal Health (women)
P.E. Physical Education

SECOND SEMESTER

Eng. 2 Composition and American Literature
G.&P. 1 American Government
Zool. 1 General Zoology
Mus. 16 Music Fundamentals for the classroom teacher
A.S. 2 R.O.T.C. (men)
Health 4 Community Health (women)
P.E. Physical Education
Sp. 3 Fundamentals of General American Speech (Childhood Education major)
C.Ed. 2 Introduction to Childhood Education (Childhood Education major)

II. TYPICAL PROGRAM FOR THE FRESHMAN YEAR

*For Students Majoring in any of the Fields Preparing to Teach
in Secondary Schools.*

FIRST SEMESTER

Ed. 1 Freshman Orientation
Eng. 1 Composition and American Literature
Soc. 1 Sociology of American Life or Phil. 1 Philosophy for Modern Man or Psych. 1, Introduction to Psychology
Sp. 1 Public Speaking
A.S. 1 R.O.T.C. (men)
Health 2 Personal Health (women)
P.E. Physical Education
Science, mathematics, foreign language, or requirements in major and minor fields

SECOND SEMESTER

Eng. 2 Composition and American Literature
Sp. 2 Public Speaking
G.&P. 1 American Government
A.S. 2 R.O.T.C. (men)
Health 4 Community Health (women)
P.E. Physical Education
Science, mathematics, foreign language, or requirements in major and minor fields

RECOMMENDED PREPARATION IN HIGH SCHOOL

Four units of English and one unit each of social sciences, natural sciences, and mathematics are required. For some major fields two units of mathematics are required. Additional units in mathematics, natural sciences, social sciences, and foreign languages are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. Fine arts, trade and vocational subjects are acceptable as electives.

COLLEGE OF ENGINEERING

Glenn L. Martin Institute of Technology

FOUR-YEAR PROGRAMS LEAD TO THE BACHELOR OF SCIENCE DEGREE IN AERONAUTICAL, chemical, civil, electrical, and mechanical engineering. Each program integrates these elements: (1) BASIC SCIENCES including mathematics, physics, chemistry; (2) ENGINEERING SCIENCES including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism; (3) PROFESSIONAL STUDIES in aeronautical, chemical, civil, electrical or mechanical engineering; (4) LIBERAL ARTS AND SOCIAL STUDIES in "The American Civilization Program," and (5) CERTAIN OTHER REQUIRED SUBJECTS including military science and physical activities.

Each program lays a broad base for *continued learning* after college in professional practice, in business or industry, in public service, or in graduate study and research.

The following is representative of work performed by engineering graduates.

THE AERONAUTICAL ENGINEER deals with problems related to transporting people and things by air and through space. Aerodynamics, thermodynamics, and the mechanics of fluids and solids are among his basic sciences. He may apply them in some phase of planning or producing airplanes, missiles, or rockets, or devising means to sustain and control their flight.

THE CHEMICAL ENGINEER applies chemistry to development and economic production of industrial chemicals, fuels, modern synthetics and certain alloys. He also applies mechanics, thermodynamics, reaction kinetics and aspects of nuclear science to unit operations and processes which are fundamental in the design and operation of the chemical industries.

THE CIVIL ENGINEER is primarily a planner, a designer, a builder, and a manager of public works and private enterprise. His professional service plays a major role in designing, supervising construction, or managing virtually every large building, bridge, dam, highway, railway, airport, water supply, waste disposal system, city plan, industrial plant, public works project, etc.

THE ELECTRICAL ENGINEER puts mathematics and the physical sciences to practical use in designing systems to generate, transmit, distribute, and use electrical energy; to transmit and receive "intelligence," as for example by telephone, radio, radar, television and computers; and to regulate and control mechanical and industrial processes by electronics and servomechanisms.

THE MECHANICAL ENGINEER figures ways to transmit power economically by heat or by mechanical systems. He applies the mechanics of fluids and solids, thermodynamics, and an understanding of the behavior of engineering materials under different conditions. As a professional engineer he devises processes for industrial production. As an industrial agent he serves as a supervisor, manager, or sales representative.



RECOMMENDED PREPARATION IN HIGH SCHOOL

If you wish to become a *professional engineer* you should enroll in an *academic* program in high school. Subjects that are recommended and required for admission are these:

SUBJECTS	RECOMMENDED	REQUIRED
<i>English</i>	4 units	4 units
<i>Mathematics (college preparatory)—including algebra (2), plane geometry (1), and solid geometry, trigonometry, or advanced mathematics</i>	3½	3½
<i>History and social sciences</i>	2	1
<i>Physical sciences</i>	2	1
<i>Foreign language—German or French</i>	2	0
<i>Unspecified academic subjects or suitable electives</i>	2½	6½
<i>Total</i>	16	16

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

All engineering students enroll in essentially the same subjects during their first year in college as follows:

SUBJECTS	SEMESTER	
	I	II
<i>Composition and American Literature</i>	3	3
<i>Public Speaking</i>	—	2
<i>Elementary Mathematical Analysis</i>	5	5
<i>General Chemistry</i>	4	4
<i>Engineering Drawing</i>	2	2
<i>Basic Air Force R.O.T.C.</i>	3	3
<i>Physical Activities</i>	1	1
<i>Total</i>	18	20

The numbers are "semester-credits." A student should plan to devote each week, on the average, three hours of *effective work* for each semester-credit on his schedule.

Each engineering student will select his major-line department—aeronautical, chemical, civil, electrical, or mechanical—before he begins his sophomore year's work. Thereafter he will pursue the approved program of his department which leads to the bachelor's degree.

Advanced engineering students who show promise of creativity and leadership in engineering, in the engineering sciences, and in teaching and research, are encouraged to continue in a program of graduate study leading to master's and doctor's degrees. There is an acute shortage of engineers with earned doctor's degrees. There are challenging opportunities for able men with such top-level preparation. The time to plan and to begin working for these top-level opportunities is while you are in high school. Your parents and your teachers can *help* provide the *opportunity*—after that *your education* is up to you. Plan to make the best of it!

COLLEGE OF HOME ECONOMICS

THE EDUCATIONAL PROGRAM OF THE COLLEGE OF HOME ECONOMICS IS planned to help students function effectively as individuals, as family members and responsible citizens; to interpret the art and science of better home living, and to prepare men and women for positions for which home economics is a major or minor preparation. Basic course requirements are similar for all home economics curricula. Entering freshmen may enroll the first year without choosing a specific major area and an assigned adviser will counsel with him relative to his program.

The primary function of home economics is to integrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy, and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

There are four departments in the College: Home Management, Equipment, and Family Economics; Food, Nutrition, and Institution Management; Practical Art; and Textiles and Clothing.

Graduates of the College of Home Economics have basic preparation for a wide variety of occupations or careers. The present program of offerings leading to the Bachelor of Science degree includes the following major curricula:

GENERAL HOME ECONOMICS. The program is designed to meet the needs of students who wish a background in several areas of home economics related to personal, home and community living. Preparation for the profession of homemaking is a recognized aspect of this curriculum. Graduates are employed with business firms—working with textiles, clothing, or equipment; in promotion—testing, demonstrating, consumer education, writing, or a combination of these.

HOME ECONOMICS EDUCATION. This program is designed for students who are preparing to teach education for home and family living, or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may qualify for a science minor.

HOME ECONOMICS EXTENSION. The program to prepare a student to become a home demonstration agent combines the general home economics courses with extension methods and home economics education. Courses in speech, journalism, and rural sociology are essential, and suggested elective subjects include literature, philosophy, art, drama, and radio.

FOOD AND NUTRITION. Students learn the scientific principles underlying food selection, purchase, preparation and service; nutritional needs of persons of different ages and occupations; food processing and marketing, and consumption practices. Because food and nutrition are applied sciences, courses in chemistry, physiology, bacteriology, psychology and economics are essential to their understanding. Graduates find positions in the consumer education de-

partments of food companies and their trade associations, magazine and advertising firms, in testing, editorial or promotion work, or as nutritionists with industry or in state or community programs.

INSTITUTION MANAGEMENT. The courses in Institution Management emphasize food preparation and service in quantity, food science, sanitation, organization and administration procedures, personnel management, nutrition, quantity purchasing, cost control, physical plant layout, and the selection and care of institution equipment. Graduates have positions dealing with food production, supervision, diet therapy, administration or teaching in school lunch programs, colleges or commercial food service, government institutions or hospitals.

PRACTICAL ART. This program permits a choice of three areas: art in advertising, interior design and costume design. Graduates will have studied in the areas of designing, promotion, selling or buying of wearing apparel or house furnishings or both.

TEXTILES AND CLOTHING; TEXTILES. Preparation in textiles, clothing and related fields of the social and physical sciences promotes understanding of textiles, fashion, clothing design and construction in relation to technological and social developments influential in determining consumer and employee behavior in the ever-changing textile and clothing market. Graduates have positions in homemaking and/or merchandising, designing, fashion promotion, textile testing, and in research.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER

English Composition and Literature
American Government
Public Speaking
Home Economics Orientation
Design
Personal Health (women)
R.O.T.C. (men)
Physical Activities
General Chemistry, Science, or Elective

SECOND SEMESTER

English Composition and Literature
Sociology of American Life
Textiles
Community Health (women)
R.O.T.C. (men)
Physical Activities
General Chemistry, Science, or Elective

RECOMMENDED PREPARATION IN HIGH SCHOOL

Four units of English and one unit each of social sciences, natural sciences, and mathematics are required. Additional units in mathematics, natural sciences, social sciences, foreign language, and home and family living are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various curricula in the College.



COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH

FOUR YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE:

PHYSICAL EDUCATION. The curriculum provides an adequate background in general education and scientific areas closely related to this field. Development of skills in a wide range of motor activities is emphasized. Many vocational opportunities are available in public and private schools, organized camping, youth and adult organizations which offer a program of physical activity.

DANCE. With the increasing recognition of the importance and scope of dance in educational programs, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

RECREATION. Through area courses in sports, speech and drama, music, arts and crafts, nature lore, and those courses in the major field itself, program planning, organization and administration, leadership, techniques, etc. students are qualified to accept leadership positions in hospitals, industry, churches, public departments, with the armed forces or the many public and private agencies.

HEALTH EDUCATION. A healthy nation is not primarily the responsibility of physicians and druggists but of the people themselves. This means that people need to know how to live healthfully and to utilize available health facilities—that is they all need health education. Persons qualified to teach health are needed in schools, colleges, community health agencies and hospitals. Students interested in qualifying for supervisory or college-level positions are encouraged

to plan on doing graduate work either in school health or public health education.

PHYSICAL THERAPY. Physical therapy is one of the professions which has come into prominence as the scope of medical care has expanded. The modern concept of the rehabilitation of acute and chronically disabled persons has created an increasing demand for physical therapy service. It offers careers for both men and women who are interested in becoming members of a service which assists the ill and handicapped achieve maximum restoration of physical function.

The University of Maryland offers a course of physical therapy leading to the Bachelor of Science degree and to a certificate of proficiency in physical therapy.

RECOMMENDED PREPARATION IN HIGH SCHOOL

In addition to the four units of English and one unit each of Social and Natural Sciences, it is especially desirable for students to have at least one unit each in Biological and Physical Science and in Algebra and Plane Geometry. Any experience in music, drama, camping, playground and recreational activities, and group leadership also will be helpful. In addition, participation in school programs of health and safety education and in physical education and athletics are desirable.

SPECIAL FACILITIES

The facilities on the campus include five gymnasias, two swimming pools, a physical fitness research laboratory, tennis courts, sports fields, golf driving range and golf course, dance studio, and an excellent library. The Washington YMCA camp, Camp Letts, also is used for certain activities.

Students also are encouraged to use the excellent facilities of the Library of Congress, Army Medical Library and Museum, and the National Institutes of Health.

EXPERIENCES

In addition to classroom and laboratory work, opportunities for teaching on and off campus and participating in field experience are provided. Membership in professional groups such as Phi Alpha Epsilon, Aqualiners, Dance Club and Gymkana troupe is encouraged as well as participation in other campus activities. In each of the fields of specialization in this College unique opportunities in dance, sports, recreation, musical and dramatics organizations exist in the environs of Washington and Baltimore.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER. English; Government and Politics; Speech; Introduction to Physical Education, Recreation and Health; Rhythmic Analysis and Movement; Sport Skills and Gymnastics; Basic Body Controls (Women); R.O.T.C. (Men)

SECOND SEMESTER. English; Zoology; Sociology, Philosophy or Economics; Modern Dance Techniques (Women); Skills in Square and Social Dance; Sport Skills and Gymnastics; R.O.T.C. (Men)



T H E S C H O O L O F P H A R M A C Y

THE PROFESSION OF PHARMACY MERITS AND INVITES THE SERIOUS CONSIDERATION of meticulous and careful individuals who wish to pursue a career of dedicated service.

The educational program of the School of Pharmacy is designed to train young women and men for the efficient, ethical practice of all branches of pharmacy; to instruct students in cultural and scientific subjects as well as in administrative and managerial methods for the orderly development of members of a profession and citizens in a democracy; to guide students into productive scholarship and research for the increase of knowledge and techniques in the healing arts of pharmacy.

The five-year curriculum at the University of Maryland leading to the degree of Bachelor of Science in Pharmacy consists of two years of pre-professional training available at College Park and three years of the pharmacy program offered in Baltimore. Students from other accredited universities or colleges offering appropriate courses may be admitted directly to the professional program at Baltimore, if admissions requirements are met.

Strong encouragement is given to superior students to continue their education beyond the bachelor degree so that they may prepare for teaching and/or research positions.

The School of Pharmacy, a member of the American Association of Colleges of Pharmacy, is accredited by the American Council on Pharmaceutical Education.

The prime opportunities available to pharmacists are in the fields of retail and hospital pharmacy.

The practice of retail pharmacy, as exemplified by a neighborhood drug store, requires the skills and knowledge of the professional man and the operational activities of the business man in preparing and servicing the medicaments and other health supplies of the community.

The hospital pharmacist utilizes his training in procuring, preparing, distributing and controlling the drug supplies and adjunct materials of his institution.

Pharmaceutical manufacturers employ pharmacists as analysts of raw materials and finished products, as supervisors in the manufacturing plants and as medical sales representatives.

Limited opportunities are available to pharmacy graduates in various local and federal agencies.

An academic program in high school is prerequisite to enrollment in the Pharmacy School. Academic subjects which are recommended and required for admission to the Pre-Pharmacy Program at College Park are:

<i>Subject</i>	<i>Recommended</i>	<i>Required</i>
English	4 units	4 units
College Preparatory Mathematics—including algebra (1), plane geometry (1) and additional units in advanced algebra, solid geometry, trigonometry, or advanced mathematics	4	2
Physical Sciences (Chemistry and Physics)	2	1
History and Social Sciences	2	1
Biological Sciences	1	0
Foreign Language—German or French	2	0
Unspecified academic subjects	1	8
Total	16	16

FRESHMAN PROGRAM AT COLLEGE PARK

All pre-pharmacy students enroll for the following courses during their first year in college:

<i>Courses</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
General Chemistry	4	4
Composition and American Literature	3	3
Algebra, Trigonometry and Analytical Geometry	3	3
or		
Elementary Mathematical Analysis	5	5
General Zoology	4	—
General Botany	—	4
Physical Activities	1	1
Basic Air Force R.O.T.C. (Men)	2	2
Health (Women)	2	2
Total	17 or 19	17 or 19



T H E S C H O O L O F N U R S I N G

THE SCHOOL OF NURSING OFFERS BOTH GENERAL AND FUNDAMENTAL EDUCATION for students who wish to prepare for professional nursing: (A) A generic four year college program planned for students who have no previous experience or knowledge in nursing; and (B) A program designed to bring up to full collegiate level the basic preparation of graduates of three year hospital diploma schools. Both programs lead to the degree Bachelor of Science in Nursing.

In association with the Graduate School of the University the School of Nursing prepares professional nurses who hold Bachelor of Science degree in Nursing with a "B" or better average as instructors, supervisors, and clinical specialists in medical and surgical nursing, psychiatric nursing, pediatric nursing, obstetrical nursing and Administration in Nursing Education and/or Services.

Beginning students in nursing spend the first two academic years on the College Park campus. Students from other accredited colleges may be admitted directly to the Baltimore campus providing they meet admission requirements.

Students in the graduate nurse supplementary program attend classes on either campus. Masters students take most of their work on the Professional School campus in Baltimore.

The School of Nursing is accredited by the National League for Nursing in all areas including public health nursing.

SPECIAL FACILITIES

The facilities for instruction used by the School of Nursing include the various colleges and professional schools of the University and the University Hospital. Other facilities include the Baltimore City Health Department, Maryland State Health Department, the State Department of Mental Hygiene and Montebello State Hospital.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER

English
Sociology
Zoology
Chemistry
Speech
Physical Activities
English

SECOND SEMESTER

English
Government and Politics
Chemistry
Speech
Nursing
Physical Activities
Math 10 Algebra

RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i>	<i>4 years</i>
<i>Mathematics</i>	<i>2 years</i>
<i>History and Social Sciences</i>	<i>2 years</i>
<i>Foreign Language</i>	<i>2 years or more</i>
<i>Science</i>	<i>1 year</i>

(*Biology, Chemistry or Physics*)

UNIVERSITY COLLEGE

THE PRIMARY PURPOSES OF THE COLLEGE ARE: (1) TO EXTEND THE FACILITIES of the University by offering adult educational programs in the on-campus evening division and at conveniently established off-campus centers located throughout the State of Maryland, the District of Columbia and at various overseas military centers; (2) to offer a Bachelor of Arts degree in General Studies and a Bachelor of Science degree in Military Studies to adult off-campus students; and (3) to arrange conferences, institutes and special programs for interested groups of adults.

Undergraduate and graduate courses are offered in the arts and sciences, business administration, education, military studies, and engineering. Both the Bachelor of Arts degree in General Studies and the Bachelor of Science degree in Military Studies are available through University College, and either may be completed in its entirety off-campus. Graduate courses are offered only in the State of Maryland and the District of Columbia.

The General Studies curriculum provides opportunity for programs in the areas of the social sciences, with concentrations of study in such fields as: economics, history, government and politics, sociology, geography, psychology, and commerce. The military studies curriculum is designed for armed services

personnel desiring to pursue military careers. Only persons who hold or have held a commission are eligible to complete this degree.

In addition, University College offers conferences, institutes, and special programs for interested adult groups. Many high school students who obtain employment upon graduation may avail themselves of these short-term educational opportunities.

Admission requirements for credit courses are the same off-campus as they are on-campus. Undergraduate students, who are undecided about their future plans may register in off-campus classes as special students. Graduate courses are open only to students who are fully matriculated in the Graduate School prior to the date of registration.

During the 1959-60 school year, educational programs were available at the statewide centers listed below:

Aberdeen Proving Ground	Ellicott City	Park Lawn
Accokeek	Fort Detrick	Patuxent
Andrews	Fort Holabird	Pentagon
Annapolis	Fort George G. Meade	Prince Frederick
Atomic Energy Commission	Fort Ritchie	Princess Anne
Baltimore	Frederick	Rockville
Bel Air	Gaithersburg	Rollingwood
Bolling Air Force Base	Glen Burnie	Salisbury
Bureau of Ships	Hagerstown	Silver Spring
Campus (College Park)	Hughesville	Snow Hill
Cambridge	La Plata	Suitland
Centreville	Maryland Penitentiary	Towson
Chestertown	Metropolitan Police	Viers Mill
Cumberland	National Bureau of Standards	Walter Reed
David Taylor Model Basin	Naval Ordnance Laboratory	Westinghouse
Denton	Naval Research Laboratory	Wheaton
District Heights	National Security Agency	Woodlin
Dundalk		
Easton		
Edgewood Army Chemical Center		

For further information, see the University College catalog which may be obtained by writing the Dean, University College, University of Maryland, College Park, Maryland.



APPENDIX A

FEES AND EXPENSES

EFFECTIVE SEPTEMBER 1, 1960

GENERAL

All checks or money orders should be made payable to the University of Maryland for the exact amount of the charges. In cases where students have been awarded General Assembly Grants or University Grants, the amount of such grants will be deducted from the bill.

All fees are due and payable at the time of registration, and students should come prepared to pay the full amount of the charges. No student will be admitted to classes until such payment has been made.

The University reserves the right to make such changes in fees and other charges as may be found necessary, although every effort will be made to keep the cost to the student as low as possible.

No degree will be conferred, nor any diploma, certificate, or transcript of record issued to a student who has not made satisfactory settlement of his account.

EXPLANATION OF FEES

The application fee for the undergraduate colleges and the summer session partially defrays the cost of processing applications for admission to these divisions of the University. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. Applicants who have enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

The Fixed Charges Fee is not a charge for tuition. It is a charge to help defray the cost of operating the University's physical plant, to pay administrative and clerical expenses and other costs which ordinarily would not be included as a cost of teaching personnel and teaching supplies.

The Instructional Materials Fee represents the average of laboratory fees assigned to full-time undergraduate students. Graduate students, part-time undergraduate students and students enrolled in the Summer School will be billed for individual laboratory fees, and not the Instructional Materials Fee. Full-time undergraduate students subject to the fees set forth below will be billed the appropriate fee and also will be billed the Instructional Materials Fee: Math 0 and Math. 1, \$30.; Applied Music, \$40.; and P. E. 8 Riding Class, \$26.

The Athletic Fee is charged for the support of the Department of Intercollegiate Athletics. All students are eligible and all students are encouraged to participate in all of the activities of this department and to attend all contests in which they do not participate.

The Student Activities Fee is a mandatory fee included at the request of the Student Government Association. It covers subscription to the *Diamondback*, student newspaper; the *Old Line*, literary magazine; the *Terrapin*, yearbook; class dues; and includes financial support for the musical and dramatic clubs and a cultural entertainment series.

The Special Fee is used to pay interest on and amortize the cost of construction of the Student Union Building, the Activities Building, and the Swimming Pool.

The Recreational Facilities Fee is paid into a fund which will be used to expand the recreational facilities on the College Park campus, especially the Student Union Building.

The Infirmary Fee is charged for the support of the Student Health Service, but does not include expensive drugs or special diagnostic procedures. Expensive drugs will be charged at cost and special diagnostic procedures, such as X-ray, electro-cardiographs, basal metabolic rates, etc., will be charged at the lowest cost prevailing in the vicinity.

The Advisory and Testing Fee is charged to cover partially the cost of the University Counseling Center and the Freshman Testing Program.

Full-time undergraduate students who register for the second semester but who were not full-time undergraduate students in the first semester are required to pay the following additional fees: Athletic Fee, \$10.00*; Student Activities, \$8.00; Special Fee, \$7.50*; Recreational Facilities Fee, \$12.50*; Infirmary, \$2.50; Advisory and Testing, \$5.00.

* Effective July 1, 1961.

DEFINITION OF RESIDENCE AND NON-RESIDENCE

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least one year.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least one full year. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least one year provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. *Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the one year period referred to above except in those cases in which the adult was domiciled in Maryland for at least one year prior to his entrance into the armed service and was not enrolled in any school during that period.*

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

FEES FOR RESIDENTS AND NON-RESIDENTS

FEES FOR UNDERGRADUATE STUDENTS:

MARYLAND RESIDENTS	<i>First</i>	<i>Second</i>	<i>Total</i>
	<i>Semester</i>	<i>Semester</i>	
Fixed Charges.....	\$ 92.00	\$ 93.00	\$185.00
Instructional Materials.....	12.00	12.00	24.00
Athletic Fee.....	20.00*	....	20.00
Student Activities Fee.....	12.00	....	12.00
Special Fee.....	15.00*	....	15.00
Recreational Facilities Fee.....	25.00*	....	25.00
Infirmity Fee.....	5.00	....	5.00
Advisory and Testing Fee.....	5.00	....	5.00
	<u>\$186.00*</u>	<u>\$105.00</u>	<u>\$291.00*</u>

RESIDENTS OF THE DISTRICT OF COLUMBIA, OTHER STATES AND COUNTRIES

	<i>Semester</i>	<i>Semester</i>	<i>Total</i>
Tuition Fee for Non-Resident Students.....	\$150.00	\$150.00	\$300.00
Total for Non-Resident Students.....	<u>\$336.00*</u>	<u>\$255.00</u>	<u>\$591.00*</u>

BOARD AND LODGING

Board.....	\$200.00	\$200.00	\$400.00
Dormitory Room:			
Maryland Residents.....	105-120	105-120	210-240
Other States and Countries.....	130-145	130-145	260-290

The above fees do not apply to the temporary Veteran's Housing Units. The rates for these family units are as follows: two-room apartment \$40 per month; three-room apartment \$43 per month.

SPECIAL FEES

Application Fee (see "Explanation of Fees," preceding page).....	\$ 10.00
Matriculation Fee.....	10.00
Graduation Fee for Bachelor's degree.....	10.00
Practice Teaching Fee.....	24.00
Special Fee for students requiring additional preparation in Mathematics, per semester (Required of students whose curriculum calls for Math. 5, 10 or 18 and who fail in qualifying examination for these courses.)	30.00
Special Guidance Fee per semester (for students who are required or who wish to take advantage of the effective study course, and/or the tutoring service offered by the Office of Intermediate Registration.....)	15.00
Room Key Deposit (A room key deposit is payable upon initial entry to the dormitories. Upon return of the key, a refund will be made whenever the student does not plan to re-enter the dormitories the next succeeding semester.).....	1.00

Fees for Auditors are exactly the same as fees charged to students registered for credit, with the exception that the non-resident fee will not be charged in the case of students not registering for credit in any courses.

Special students are assessed fees in accordance with the schedule for the comparable undergraduate or graduate classification.

*Effective July 1, 1961.

LABORATORY AND OTHER FEES

Paid by all students except full-time undergraduate students who are assessed the Instructional Materials Fee.

LABORATORY FEES PER SEMESTER COURSE:

Agricultural Engineering.....	\$ 3.00	Horticulture.....	\$ 5.00
Botany.....	5.00, 6.00 and 10.00	Industrial Education.....	5.00 and 7.50
Business Administration.....	7.50 and 10.00	Mechanical Engineering.....	3.00 and 6.00
Journalism.....	3.00 and 6.00	Microbiology.....	11.00 and 20.00
Statistics.....	3.50	Physical Activities Courses.....	6.00
Chemical Engineering.....	8.00 and 10.00	Physics—	
Chemistry.....	12.00* and 20.00	Lecture Demonstration.....	2.00 and 3.00
Education (depending on Laboratory).....	1.00, 2.00, 3.00, 5.00	Introductory.....	3.00
Dairy.....	3.00	All Other.....	10.00
Electrical Engineering.....	4.00	Psychology.....	4.00
Entomology.....	3.00	Office Techniques and Management.....	7.50 and 10.00
Home Economics—		Speech (depending on Laboratory).....	1.00, 2.00, 3.00, 7.50 and 10.00
Practical Art, Crafts, Textiles and Clothing.....	3.00	Radio and Stage Craft.....	2.00
Foods and Home Management, each.....	3.00, 7.00 and 10.00	Zoology.....	8.00

MISCELLANEOUS FEES AND CHARGES

Fee for part-time student per credit hour..... 12.00
(The term "part-time students" is interpreted to mean undergraduate students taking 6 semester credit hours or less. Students carrying more than 6 semester hours are considered to be full time and must pay the regular full-time fees.)

Late Registration Fee..... 5.00
(All students are expected to complete their registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete their registration during the prescribed days must pay this fee.)

Fee for change in registration..... 3.00

Fee for failure to report for medical examination appointment..... 2.00

Special Examination Fee—to establish college credit—per semester hour..... 5.00

Makeup Examination Fee (for students who are absent during any class period when tests or examinations are given)..... 1.00

Transcript of Record Fee (one transcript furnished without charge)..... 1.00

Property Damage Charge: Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed, the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be prorated.

Library Charges:

Fine for failure to return book from General Library before expiration of loan period..... per day .05

Fine for failure to return book from Reserve Shelf before expiration of loan period:

First hour overdue..... .25

Each additional hour overdue..... .05

In case of loss or mutilation of a book, satisfactory restitution must be made.

In the event it becomes necessary to transfer uncollected charges to the Cashier's office, an additional charge of \$1.00 is made.

TEXTBOOKS AND SUPPLIES

Textbooks and classroom supplies: These costs vary with the course pursued, but will average per semester..... 35.00

FEES FOR GRADUATE STUDENTS

Fees for student carrying 10 or more semester credit hours..... 120.00

Fee per semester hour for students carrying less than 10 semester credit hours..... 12.00

Matriculation Fee, payable only once, at time of first registration..... 10.00

Graduation Fee for Master's Degree..... 10.00

Graduation Fee for Doctor's Degree..... 50.00

Infirmary Fee..... 5.00

Foreign Language examination (first examination without charge)..... 5.00

Testing Fee (Education Majors)..... 5.00

*Effective July 1, 1961.

NOTES: Fees in the Graduate School are the same for all students, whether or not they are residents of the State of Maryland.
 All fees, except Graduation Fee, are payable at the time of registration for each semester. Graduation Fee must be paid prior to graduation.
 No provision for housing students is made by the University.
 Graduate students entering in February pay an Infirmary fee of \$2.50.

FEES FOR OFF-CAMPUS COURSES

- Matriculation Fee (payable once, at time of first registration by all students—full time and part time, candidates for degrees, and non-candidates):
 - For Undergraduates.....\$ 10.00
 - For Graduates..... 10.00
- Fee for all students—limit 6 hours. For exceptional adult students taking off-campus courses the limit may be increased to 9 hours. Charge per credit hour..... 12.00
- Laboratory Fees: A laboratory fee, to cover cost of materials used, is charged in laboratory courses. Fees vary with the course and can be ascertained in any case by inquiry to the Dean of University College.

WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year should file an application for withdrawal, bearing the proper signatures, in the Office of the Registrar. If this is not done, the student will not be entitled, as a matter of course, to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is filed in the Office of the Registrar.

In the case of a minor, withdrawal will be permitted only with the written consent of the student's parent or guardian.

Students withdrawing from the University will be credited for all fees charged to them except the Application Fee, the Matriculation Fee and board in accordance with the following schedule:

<i>Period from Date Instruction Begins</i>	<i>Refundable</i>
Two weeks or less.....	80%
Between two and three weeks.....	60%
Between three and four weeks.....	40%
Between four and five weeks.....	20%
Over five weeks.....	0

The Application Fee and the Matriculation Fee are not returnable in any instance.

Board is refunded only in the event the student withdraws from the University. Refunds of board are made on a pro-rata, weekly basis. Dining Hall cards issued to boarding students must be surrendered at the Auditor's Office in the Administration Building on the day of withdrawal, before any refund will be processed.

In computing refunds to students who have received the benefit of scholarships and loans from University Funds, the computation will be made in such a way as to return the maximum amount to the scholarship and loan accounts without loss to the University.

No refund of the Athletic, Student Activity, Special, Recreational Facilities, Infirmary, and Advisory and Testing Fees is made to students who withdraw at the close of the first semester.

No refunds of Fixed Charges, Lodging, Tuition, Laboratory Fees, Instructional Materials Fee, etc., are allowed when courses are dropped, unless the student withdraws from the University.

When regularly enrolled part-time students in off-campus instruction officially drop a course or courses and continue with one or more courses, they may receive a refund of 80% for the dropped courses if they are officially dropped prior to the third meeting of the class or classes.

TRANSCRIPTS OF RECORDS

Students and alumni may secure transcripts of their scholastic records from the Office of the Registrar. No charge is made for the first copy; for additional copies, there is a charge of \$1.00 for each transcript, except when more than one copy is requested at the same time. In that case, one dollar is charged for the first copy, and fifty cents for each additional copy. Checks should be made payable to the University of Maryland. Transcripts of records should be requested at least one week in advance of the date when the records are actually needed. No transcript of a student's record will be furnished any student or alumnus whose financial obligations to the University have not been satisfied.

APPENDIX B

HONORS, AWARDS, SCHOLARSHIPS AND GRANTS-IN-AID

HONORS, AWARDS

SCHOLARSHIP HONORS—Final honors for excellence in scholarship are awarded to one-fifth of the graduating class in each College. *First honors* are awarded to the upper half of this group; *second honors* to the lower half. To be eligible for honors, a student must complete at least two years of resident work at the University with an average of B (3.0) or higher.

MILTON ABRAMOWITZ MEMORIAL PRIZE IN MATHEMATICS—A prize is awarded annually to a junior or senior student majoring in mathematics who has demonstrated superior competence and promise for future development in the field of mathematics and its applications.

ALPHA CHI SIGMA AWARD—The Alpha Rho Chapter of the Alpha Chi Sigma Honorary Fraternity offers annually a year's membership in the American Chemical Society to the senior majoring in Chemistry or Chemical Engineering whose average has been above 3.0 for three and one-half years.

ALPHA LAMBDA DELTA AWARD—Presented to the senior member of the group who has maintained the highest average for three and a half years. She must have been in attendance in the institution for the entire time.

ALPHA LAMBDA DELTA SENIOR CERTIFICATE AWARD—Senior members of Alpha Lambda Delta, honorary scholastic society for women, who have maintained an average of 3.5, receive this certificate.

ALPHA ZETA MEDAL—The Professional Agricultural Fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN AWARD—This award is presented to a senior woman selected for scholarship and community leadership.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS AWARD—A certificate, pin, and magazine subscription are awarded to the junior member of the Student Chapter who attained the highest overall scholastic average during his freshman and sophomore years.

AMERICAN INSTITUTE OF CHEMISTS AWARD—Presented for outstanding scholarship in chemistry and for high character.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AWARD—The Washington Section of the American Institute of Electrical Engineers defrays the expenses of a year's membership as an associate in the Institute for the senior doing the most to promote Student Branch activities.

AMERICAN PUBLIC RELATIONS ASSOCIATION—The Baltimore Chapter of APRA presents an Annual Citation to the outstanding senior with a public relations major.

AMERICAN SOCIETY OF CIVIL ENGINEERS AWARD—The Maryland Section of the American Society of Civil Engineers awards annually the first year's dues of an associate membership in the Society to a senior member of the Student Chapter on recommendation of the faculty of the Department of Civil Engineering.

AMERICAN SOCIETY FOR METALS AWARD—Presented for outstanding attainments in metallurgy, Department of Chemical Engineering.

APPLEMAN-NORTON AWARD IN BOTANY—The Department of Botany offers a scholarship award of \$100 in honor of Emeritus Professors C. O. Appleman and J. B. S. Norton to a senior major in Botany who is considered worthy on the basis of demonstrated ability and excellence in scholarship. The scholarship is awarded by the Committee on Scholarships upon the recommendation of a committee of the faculty of the Department of Botany.

ASSOCIATED WOMEN STUDENTS AWARDS—Presented for outstanding achievement, character, and service to the University.

DAVID ARTHUR BERMAN MEMORIAL AWARD—This award is offered by the family of David Arthur Berman to the highest ranking junior in the Department of Chemical Engineering who is also a member of Tau Beta Pi.

DINAH BERMAN MEMORIAL MEDAL—The Dinah Berman Memorial Medal is awarded annually to the sophomore who has attained the highest scholastic average of his class in the College of Engineering. The medal is given by Mr. Benjamin Berman.

B'NAI B'RITH AWARD—The B'nai B'rith Women of Prince George's County present a Book Award for excellence in Hebrew Studies.

CITIZENSHIP PRIZE FOR MEN—President Emeritus H. C. Byrd, of the Class of 1908, annually presents this award to the member of the senior class who, during his collegiate career, has most nearly typified the model citizen and who has done most for the general advancement of the interests of the University.

CITIZENSHIP PRIZE FOR WOMEN—This prize is presented annually as a memorial to Sally Sterling Byrd, by her children, to that member of the senior class who best exemplifies the enduring qualities of the pioneer woman. These qualities typify self dependence, courtesy, aggressiveness, modesty, capacity to achieve objectives, willingness to sacrifice for others, strength of character, and those other qualities that enabled the pioneer woman to play such a fundamental part in the building of the nation.

CIVIL ENGINEERING HONOR SOCIETY AWARD—A year's subscription to *Civil Engineering* is awarded annually by the Society to the outstanding civil engineering sophomore.

ERNIE COBLENTZ MEMORIAL TROPHY—Offered to the most outstanding freshman for work done on student publications.

BERNARD L. CROZIER AWARD—The Maryland Association of Engineers awards a cash prize of twenty-five dollars annually to the senior in the College of Engineering who, in the opinion of the faculty, has made the greatest improvement in scholarship during his stay at the University.

VIRGINIA DARE AWARD—The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an overall good standing in dairy.

DAVIDSON TRANSFER AND STORAGE COMPANY AWARD—A \$500.00 award is made to a high-ranking student in the College of Business and Public Administration who is concentrating in transportation. This award is made through the College of Business and Public Administration.

DELTA DELTA DELTA MEDAL—This sorority awards a medal annually to the woman who attains the highest average in academic work during the sophomore year.

DELTA GAMMA SCHOLARSHIP AWARD—This award is offered to the woman member of the graduating class who has maintained the highest average during three and one-half years at the University.

DELTA SIGMA PI SCHOLARSHIP KEY—This award is offered to a member of the graduating class who has maintained the highest scholastic average for the entire four-year course in the College of Business and Public Administration.

EDUCATION ALUMNI AWARD—Presented to the outstanding senior man and senior woman in the College of Education.

GODDARD MEDAL—The James Douglass Goddard Memorial Medal is awarded annually to the resident of Prince Georges County, born therein, who makes the highest average in his studies and who at the same time embodies the most manly attributes. The medal is given by Mrs. Anne G. Goddard James of Washington, D. C.

GRANGE AWARD—The Maryland State Grange makes an annual award to the senior who has excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

MAHLON N. HAINES AWARD—An award of one hundred dollars is presented each year to the students in the Department of Fine Arts for outstanding work in the painting classes.

CHARLES B. HALE DRAMATIC AWARDS—The University Theatre recognizes annually the man and woman members of the senior class who have done most for the advancement of dramatics at the University.

HAMILTON AWARD—This award is offered by the Hamilton Watch Company to the graduating senior in the College of Engineering who has most successfully combined proficiency in his major field of study with achievements—either academic, extra-curricular, or both—in the social sciences or humanities.

HOME ECONOMICS ALUMNI AWARD—Presented to the student outstanding in application of home economics in her present living and who shows promise of carrying these into her future home and community.

WILLIAM H. HOTTEL AWARD—Presented to the most outstanding senior for work done on student publications during his college career.

INDUSTRIAL PRESS ACHIEVEMENT AWARD—An award by the Industrial Press Company for scholastic excellence in air conditioning, heating, and ventilation studies.

INSTITUTE OF AERONAUTICAL SCIENCES AWARDS—Free memberships in the Institute for one year and cash prizes for the best paper presented at a Student Branch meeting and for the graduating aeronautical senior with the highest academic standing.

MACHINERY'S AWARD—For excellence in machine design, a copy of *Machinery's Handbook* and a copy of the Handbook Guide is awarded annually to a mechanical engineering senior.

MARYLAND MOTOR TRUCK ASSOCIATION AWARD—A five hundred dollar award is made to a student majoring in Transportation with an interest in motor transportation who has shown in three years of training an apparent ability to succeed. This award is made through the College of Business and Public Administration.

MARYLAND PRESS ASSOCIATION ANNUAL CITATION—Presented to the outstanding senior in journalism.

MEN'S LEAGUE CERTIFICATES—Offered for outstanding achievement, character, and service to the University.

MEN'S LEAGUE CUP—This award is offered by the Men's League to the graduating male senior who has done the most for the male student body.

OMICRON NU SORORITY MEDAL—This honorary sorority awards a medal annually to the freshman woman in the College of Home Economics who attains the highest scholastic average during the first semester.

PHI ALPHA AWARD—Epsilon Chapter of Phi Alpha Fraternity awards annually a plaque to the man in the junior class who has attained the highest scholastic average during his first two years at the College Park colleges of the University.

PHI BETA KAPPA ASSOCIATION AWARD—This award is presented to the graduating senior with the highest cumulative scholastic average whose basic course program has been in the liberal studies.

PHI CHI THETA KEY—The Phi Chi Theta Key is awarded to the outstanding graduating senior woman in the College of Business and Public Administration on the basis of scholarship, activities, and leadership.

PHI DELTA KAPPA AWARD—Presented to an outstanding man in the graduating class.

PI DELTA EPSILON NATIONAL MEDAL OF MERIT AWARDS—Offered by the National Council of Pi Delta Epsilon to the outstanding senior woman and the outstanding senior man.

PILGRIMS OF ST. MARY'S—Each year the Pilgrims of St. Mary's offers two awards for the two best essays on Maryland history. The first prize is for \$50.00; the second prize is \$25.00.

PILOT FREIGHT CARRIERS, INC., AWARD—A five hundred dollar award is made to a senior student in the College of Business and Public Administration who has majored in transportation and who has demonstrated competence in this field of study. This award is made through the College of Business and Public Administration.

PI SIGMA ALPHA—FRED HAYS MEMORIAL AWARD—This award, consisting of the sum of thirty dollars, is presented by an alumnus to the senior in Government and Politics having the highest average in departmental courses.

PI TAU SIGMA AWARD—An annual handbook award to the most outstanding sophomore in mechanical engineering on the basis of scholastic average and instructors' ratings.

WILLIAM S. ROSENBAUM MEMORIAL FOUNDATION AWARD—This award, consisting of twenty-five dollars, is presented for excellence in Hebrew studies by Barbarossa Lodge 133, Knights of Pythias, Philadelphia, Pennsylvania.

SIGMA ALPHA OMICRON AWARD—This award is presented to a senior student majoring in Bacteriology for high scholarship, character and leadership.

SIGMA CHI CUP—Sigma Chi Fraternity offers annually a cup to the man in the freshman class who has made the highest scholastic average during the first semester.

ALGERNON SYDNEY SULLIVAN AWARD—The New York Southern Society, in memory of its first president, awards annually medallions and certificates to one man and one woman of the graduating class and one non-student who evince in their daily life a spirit of love for and helpfulness to other men and women.

TAU BETA PI AWARD—The Maryland Beta Chapter of Tau Beta Pi Association, national engineering honor society, awards annually an engineer's handbook to the junior in the College of Engineering who during his sophomore year has made the greatest improvement in scholarship over that of his freshman year.

WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD—Awarded annually to the graduating senior who has maintained the highest scholastic achievement in the field of financial administration. The award consists of a silver medal embedded in clear plastic and one year's subscription to the *Wall Street Journal*.

EDGAR P. WALLS AWARD—Dr. Edgar P. Walls awards annually a gold watch to the senior doing outstanding work in horticultural processing.

WASHINGTON PANHELLENIC ASSOCIATION AWARD—The sum of two hundred dollars is presented to a woman student, a member of the National Panhellenic Conference Sorority, who has done most to promote social relations among the sororities on the campus.

AIR FORCE ROTC AWARDS

AIR FORCE ASSOCIATION MEDAL—This silver medal is awarded to the outstanding advanced cadet in the AFROTC course who has demonstrated outstanding ability in scholastic grades, both general and military, in individual characteristics, and in performance during the period of summer camp.

ALUMNI CUP—The Alumni Association offers each year a cup to the Leader of the best drilled Flight in competitive drill.

AMERICAN LEGION POST NO. 217 AWARD—This award is presented to the senior advanced cadet who displays outstanding leadership.

AMERICAN LEGION GOLD MEDAL—The gold medal is awarded to the senior advanced cadet for academic achievement in leadership.

ARMED FORCES COMMUNICATIONS MEDAL—This medal is awarded to the senior advanced cadet in recognition of outstanding achievement in the field of electronics.

ARNOLD AIR SOCIETY PLAQUE—This plaque is awarded to the second year advanced cadet who has done the most to advance the AFROTC interests and activities for the Arnold Air Society.

CONSOLIDATED VULTEE AIRCRAFT CORPORATION AWARD—This award is presented to the sophomore cadet displaying leadership ability and academic excellence.

DISABLED AMERICAN VETERANS' GOLD CUP—This cup is awarded to the senior advanced cadet who has displayed outstanding leadership, scholarship, and citizenship.

DISTINGUISHED AFROTC CADET AWARDS—These awards are presented to senior cadets who have been outstanding in AFROTC and who are outstanding in their academic major fields. Distinguished AFROTC cadets are eligible to apply for regular Air Force commission.

DISTINGUISHED AFROTC GRADUATE—Presented to distinguished cadets of the AFROTC who continue to display outstanding academic and leadership qualities.

FRESHMAN DIVISION SILVER CUP—Awarded by the Freshman Division, Department of Air Science to a freshman cadet for outstanding leadership, military bearing and aptitude and desire for an Air Force career.

GOVERNOR'S CUP—This cup is offered each year by His Excellency, the Governor of Maryland, to the best drilled squadron.

HAMILL MEMORIAL PLAQUE—This plaque, offered by the local chapter of Theta Chi Fraternity, is presented to the sophomore cadet excelling in leadership and scholarship.

AFROTC ANGEL FLIGHT AWARD—Presented to the most outstanding member of the Angel Flight.

AFROTC ANGEL FLIGHT FRESHMAN AWARD—Presented to the freshman who displays outstanding leadership and shows the most promise for advanced AFROTC.

CHARLES H. DICKINSON MEMORIAL PLAQUE—Offered by the Veterans Club, University of Maryland, to the Junior cadet who has shown leadership ability, outstanding individual characteristics of military bearing.

VANDENBERG GUARD AWARD—Presented to the member displaying most leadership ability.

GLENN L. MARTIN AERONAUTICAL ENGINEERING AWARD—This award is presented for academic excellence in the field of aeronautical engineering to a senior advanced cadet who has applied for flight training.

MARYLAND STATE SOCIETY DAUGHTERS OF FOUNDERS AND PATRIOTS OF AMERICA AWARD—This award is presented to the freshman cadet attaining the highest over-all academic grades.

MILITARY ORDER OF WORLD WARS AWARD—Presented to the outstanding graduate of the NCO Academy.

NATIONAL DEFENSE TRANSPORTATION ASSOCIATION AWARD—This organization offers a citation in recognition of leadership qualities, academic standing, aptitude for military service, and noteworthy service in furtherance of the aims and objectives of the Association in promoting preparedness for the national defense of the United States.

PERSHING RIFLE REGIMENTAL MEDAL—Presented to the member of Pershing Rifles who shows outstanding service to the company.

PERSHING RIFLE SILVER AND BRONZE MEDALS—The Pershing Rifle Company presents medals to most outstanding basic cadets who are members of the Pershing Rifles.

PERSHING RIFLE AWARD—Medal presented by Pershing Rifle Company to the best drilled cadet of the corps who is not a member of Pershing Rifles.

PERSHING RIFLE GOLD MEDAL—This medal is awarded to the outstanding member of the Pershing Rifles.

GEORGE M. REILEY, JR., AWARD—A memorial plaque presented by the family of George M. Reiley, Jr., to the member of the Flight Instruction Program showing the most aptitude for flying.

RESERVE OFFICERS' ASSOCIATION MEDALS—Three medals, gold, silver, and bronze, are presented by this association to the three senior cadets demonstrating outstanding academic achievement in the AFROTC and in other studies.

RESERVE OFFICERS' ASSOCIATION RIBBONS—The Air Force Reserve Officers Association presents ribbons to the 40 outstanding freshman cadets, the 30 outstanding sophomore cadets, and to 10 outstanding Juniors.

SCABBARD AND BLADE COBLENTZ MEMORIAL CUP—This cup awarded to the Commander of the winning Squadron in drill competition.

SOCIETY OF AMERICAN MILITARY ENGINEERS AWARD—Presented to the senior cadet displaying outstanding scholastic achievement and leadership and majoring in the field of engineering.

SONS OF THE AMERICAN REVOLUTION AWARD—This award is presented to the senior Advanced Cadet who exhibits in his work a high degree of merit with respect to leadership, military bearing, and excellence in his academic course of study.

SUN NEWSPAPER AWARD—This award is presented to a basic cadet in recognition of being the best drilled basic cadet in competitive drill.

ATHLETIC AWARDS

THE ALVIN L. AUBINOE BASKETBALL TROPHY—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad.

THE ALVIN L. AUBINOE FOOTBALL TROPHY—This trophy is offered by Alvin L. Aubinoe for the unsung hero of the current season.

THE ALVIN L. AUBINOE TRACK TROPHY—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad during the time he was on the squad.

LOUIS W. BERGER TROPHY—Presented to the outstanding senior baseball player.

WILLIAM P. COLE, III, MEMORIAL LACROSSE AWARD—This award, offered by the teammates of William P. Cole, III and the coaches of the 1940 National Champion team, is presented to the outstanding midfielder.

JOE DECKMAN-SAM SILBER TROPHY—This trophy is offered by Joseph H. Deckman and Samuel L. Silber to the most improved defense lacrosse player.

HALBERT K. EVANS MEMORIAL TRACK AWARD—This award, given in memory of "Hermie" Evans, of the Class of 1940, by his friends, is presented to the outstanding graduating senior trackman.

HERBERT H. GOODMAN TROPHY—This trophy is offered by Herbert H. Goodman to the most outstanding wrestler of the year.

CHARLES LEROY MACKERT TROPHY—This trophy is offered by William E. Krouse to the Maryland student who has contributed most to wrestling while at the University.

MARYLAND RING—The Maryland Ring is offered as a memorial to Charles L. Linhardt, of the Class of 1912, to the Maryland man who is adjudged the best athlete of the year.

CHARLES P. MC CORMICK TROPHY—This trophy is offered by Charles P. McCormick to the senior letterman who has contributed most to swimming during his collegiate career.

ANTHONY C. NARDO MEMORIAL TROPHY—This trophy is awarded to the best football lineman of the year.

EDWIN POWELL TROPHY—This trophy is offered by the Class of 1913 to the player who has rendered the greatest service to lacrosse during the year.

SILVESTER WATCH FOR EXCELLENCE IN ATHLETICS—A gold watch, given in honor of former president of the University, R. W. Silvester, is offered annually to "the man who typifies the best in college athletics."

TEKE TROPHY—This trophy is offered by the Maryland Chapter of Tau Kappa Epsilon Fraternity to the student who during his four years at the University has rendered the greatest service to football.

ROBERT E. THEOFELD MEMORIAL—This trophy is presented by Dr. and Mrs. Harry S. Hoffman and is awarded to the golfer who most nearly exemplifies the competitive spirit and strong character of Robert E. Theofeld, a former member of the boxing team.

STUDENT GOVERNMENT AWARDS

Keys are awarded to the members of the Executive Committee of the Student Government Association, Men's League, Association of Women Students, and other organizations who faithfully perform their duties throughout the year.

SCHOLARSHIPS AND GRANTS-IN-AID

All requests for information concerning scholarships and grants-in-aid should be addressed to the Director of the Office of Scholarships and Grants-in-Aid, University of Maryland, College Park, Maryland. Regulations and procedures for the award of scholarships are formulated by this committee.

The Board of Regents of the University authorizes the award of a limited number of scholarships each year to deserving students. All scholarships and grants for the undergraduate departments of the University at College Park are awarded by a faculty committee. Applicants are subject to the approval of the Director of Admissions insofar as qualifications for admission to the University are concerned. All recipients are subject to the academic and non-academic regulations and requirements of the University.

Scholarships and grants are awarded to young men and women based upon apparent academic ability and financial need. In making awards, consideration is given to character, achievement, participation in student activities and to other attributes which may indicate success in college. It is the intent of the Committee to make awards to those qualified who might not otherwise be able to provide for themselves an opportunity for higher education.

The recipient of a scholarship or a grant is expected to make at least normal progress toward a degree. Normal progress toward a degree is defined by the Academic Probation Plan.

The Committee on Scholarships and Grants-in-Aid reserves the right to review the scholarship program annually and to make adjustments in the amounts and recipients of awards in accordance with the funds available and scholastic attainment.

The types of scholarships, grants and loan funds available follow:

FULL SCHOLARSHIPS

The University awards fifty-six full scholarships covering board, lodging, fixed charges, fees and books. Not more than twenty of these scholarships may be held by out-of-state students and at least twelve are reserved for women. Scholastic achievement and participation in student activities are given primary consideration in the award of these scholarships.

UNIVERSITY GRANTS

The University awards to deserving and qualified secondary school graduates a limited number of grants covering fixed charges only.

GENERAL ASSEMBLY GRANTS

These grants are for fixed charges and are awarded by members of the Legislature, three for each Senator and one for each member of the House of Delegates. They may be awarded by a member of the House of Delegates or by a Senator only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents. Awards of such grants are subject to approval by the Committee on Scholarships and by the Director of Admissions as to qualifications for admission.

SPECIAL ACADEMIC SCHOLARSHIPS

A limited number of scholarships is awarded each year to students of exceptional academic ability out of funds derived from campus enterprises. The amount of these scholarships varies depending upon the extent of need. These awards are made by the Committee on Scholarships and Grants-in-Aid in accordance with the general principles underlying the award of all other scholarships.

ENDOWED SCHOLARSHIPS AND GRANTS

The University has a number of endowed scholarships and special grants. These are paid for by income from funds especially established for this purpose. Brief descriptions of these awards follow:

ALBRIGHT SCHOLARSHIP—The Victor E. Albright Scholarship is open to graduates of Garrett County high schools who were born and reared in that county. Application should be made to the high school principals.

ALUMNI SCHOLARSHIPS—The General Alumni Council of the University Alumni Association provides eleven scholarships in the amount of \$250 each to be awarded respectively to schools or colleges represented on the Alumni Council. The awards are based on scholarship, leadership and need and are awarded by the Faculty Committee on Scholarships and Grants-in-Aid.

ALVIN L. AUBINOE STUDENT AID PROGRAM—Scholarship grants up to \$500 per school year to students in engineering, preferably those studying for careers in civil engineering, architecture or light construction.

AMERICAN SOCIETY FOR METALS SCHOLARSHIP IN METALLURGY—A scholarship of \$500 is available to a competent student in the field of Metallurgy. The award will be made by the faculty in Metallurgy in accordance with the general principles underlying the award of all scholarships in the University.

BALTIMORE PANAHELLENIC ASSOCIATION SCHOLARSHIP—A scholarship is awarded annually by the Baltimore Panhellenic Association. This scholarship will be awarded to a student entering the junior or senior class, who is an active member of a sorority, who is outstanding in leadership and scholarship and who needs financial assistance. This award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the Office of the Dean of Women.

BALTIMORE SUNPAPERS SCHOLARSHIP IN JOURNALISM—The Board of Trustees of the A. S. Abell Foundation, Inc., has contributed \$500 to provide a scholarship in journalism to be awarded to a worthy senior in the College of Business and Public Administration who is majoring in Editorial Journalism.

SAMUEL WOLFE BLANKMAN GRANT—The sum of \$100 is awarded each year to a foreign student on the basis of worth and need to be determined by the Committee on Scholarships. The student must be a permanent resident of a country other than the United States, its possessions, or Canada. He may be a member of any college or school in the University.

BORDEN AGRICULTURAL AND HOME ECONOMICS SCHOLARSHIPS—A Borden Agricultural Scholarship of \$300 is granted to that student in the College of Agriculture who has had two or more of the regularly listed courses in dairying and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

A Borden Home Economics Scholarship of \$300 is granted to that student in the College of Home Economics who has had two or more of the regularly listed courses in foods and nutrition and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

CAPITAL FARM AND GARDEN SCHOLARSHIP—This scholarship of \$400 per year is made available by the Capital Division of the Women's National Farm and Garden Association, Inc. to help rural girls and women through scholarships and guidance to the best training in agriculture, horticulture, home economics and the related professions. This scholarship is awarded by the Committee on Scholarships and Grants-in-Aid in accordance with terms of the grant.

WILLIAM F. CHILDS, JR., GRANT—The Maryland Highways Contractors Association provides a grant of \$500 annually to be awarded to a capable and worthy senior in the Department of Civil Engineering who plans to enter the field of Highway Engineering upon graduation. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

DR. ERNEST N. CORY SCHOLARSHIP—This award is made annually to an outstanding junior or senior in the College of Agriculture, preferably one majoring in Entomology. The amount of the award will vary depending upon the earnings of a trust fund established in honor of Dr. Ernest N. Cory upon his retirement. The Committee on Scholarships and Grants-in-Aid cooperates with the College of Agriculture in selecting the student for this award.

THE DANFORTH FOUNDATION AND THE RALSTON PURINA SCHOLARSHIPS—The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer scholarships to outstanding men students in the College of Agriculture, one for a student who has successfully completed his junior year, the other for a student who has successfully completed his freshman year. The purpose of these scholarships is to bring together outstanding young men for leadership training.

The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer scholarships to outstanding Home Economics women students, one to a junior and one to a freshman. The purpose of these scholarships is to bring together outstanding young women for leadership training.

DAIRY TECHNOLOGY SCHOLARSHIPS AND GRANTS—The Dairy Technology Society of Maryland and the District of Columbia provides a limited number of scholarships and grants-in-aid for students majoring in Dairy Products Technology. These awards are available both to high school graduates entering the University as freshmen and to students who have completed one or more years of their University curriculum. The purpose of these awards is to encourage and stimulate interest in the field of milk and milk products. The awards are based on scholarship, leadership, personality, need, experience, interest in and willingness to work in the field of dairy technology. These awards are made by the Committee on Scholarships and Grants-in-Aid in cooperation with the Dairy Technology Society.

EXEL SCHOLARSHIPS—A substantial grant for endowed scholarships was made by Deborah B. Exel. These awards are made by the Committee on Scholarships to worthy students in accordance with the general principles underlying the award of all other scholarships.

ANNE ARUNDEL COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT—This grant is awarded to a high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The amount of the award is \$300 per year and will be available to the recipient for the normal period of time to complete the program being pursued. This grant is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Anne Arundel County Volunteer Fireman's Association and the College of Engineering.

LADIES AUXILIARY TO THE MARYLAND STATE FIREMEN'S ASSOCIATION GRANT—This grant is awarded to an outstanding high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The amount of this award is \$500 per year and will be available to the recipient for the normal period of time to complete the program being pursued. This grant is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Ladies Auxiliary to the Maryland State Firemen's Association and the College of Engineering.

MARYLAND STATE FIREMEN'S ASSOCIATION GRANT—A \$300 scholarship is awarded annually to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. This scholarship is for four years and is awarded to a student of high scholastic ability with a reputation of good character and outstanding fire service interest. The award is made by the Faculty Committee on Scholarships in cooperation with the Maryland State Firemen's Association and the Fire Protection Department of the College of Engineering.

PRINCE GEORGES COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT—An annual scholarship of \$300 is awarded to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. The award is based on high scholastic ability, good character and outstanding fire service interest. The Faculty Committee on Scholarships and Grants-in-Aid cooperates with the Fire Protection Department of the College of Engineering and the Board of Directors of the Prince Georges County Volunteer Firemen's Association in selecting the student.

FOOD FAIR STORES FOUNDATION SCHOLARSHIPS—Each year a number of scholarships is made available by the Food Fair Stores Foundation to students from Anne Arundel, Baltimore, Frederick, Montgomery, and Talbot counties and Baltimore City. Students receiving these scholarships may pursue any of the four-year curriculums of the University. The scholarships are for \$250 for an academic year and are awarded by the Committee on Scholarships as in the case of all other scholarships. Under certain conditions they may be granted from year to year.

VICTOR FRENKIL SCHOLARSHIP—A scholarship of \$250 is granted annually by Mr. Victor Frenkil of Baltimore to a student from Baltimore City in the freshman class of the University. This scholarship is awarded in cooperation with the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

GENERAL MOTORS SCHOLARSHIP—This scholarship is granted annually to any young man or young woman who is an outstanding individual entering the freshman year. The scholarship is awarded by the Committee on Scholarships. The amount of the stipend depends upon the demonstrated need of the individual. The Sponsored Scholarship Service evaluates the financial need in each case.

GODDARD MEMORIAL SCHOLARSHIPS—Four \$500 scholarships are available annually under the terms of the James and Sarah E. R. Goddard Memorial Fund established through the wills of Morgan E. Goddard and Mary Y. Goddard. In granting these awards the Committee on Scholarships will consider outstanding scholastic achievement and financial need. Each award will be made on a year-to-year basis depending upon the accomplishment of the student.

WILLIAM RANDOLPH HEARST FOUNDATION SCHOLARSHIPS—These scholarships are made available through a gift of the Baltimore News-Post, one of the Hearst newspapers, in honor of William Randolph Hearst. Scholarships up to \$500 are awarded annually to undergraduates pursuing a program of study in journalism. Scholarships up to \$1,000 are awarded annually for graduate study in history. These scholarships are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Departments of History and Journalism.

INTER-REGIONAL INSURANCE CONFERENCE SCHOLARSHIPS—Fifteen awards are made annually for room, board, tuition, and fees to outstanding high school students enrolling in the Fire Protection Curriculum of the College of Engineering. Students residing in eleven states in the

Conference area and the District of Columbia are eligible for these scholarships. Employment obligations are required. Recipients of scholarships are selected by the Scholarship Committee of the Inter-Regional Insurance Conference in cooperation with the Faculty Committee on Scholarships.

IOTA LAMBDA SIGMA (NU CHAPTER) SCHOLARSHIP—This scholarship is awarded annually to a male student who wishes to enroll or is enrolled in the Industrial Education curriculum. The student must be a resident of the State of Maryland and signify his intention of teaching in Maryland. The amount of the scholarship is \$200.00.

VENIA M. KELLER GRANT—The Maryland State Council of Homemakers' Clubs makes available this grant of \$100 which is open to a Maryland young man or woman of promise who wishes to enroll or is enrolled in the College of Home Economics. It is awarded through the College of Home Economics in cooperation with the Committee on Scholarships.

KIWANIS SCHOLARSHIP—A Kiwanis Memorial Scholarship of \$200 per year is awarded by the Prince Georges County Kiwanis Club to a male resident of Prince Georges County, Maryland, who, in addition to possessing the necessary qualifications for maintaining a satisfactory scholarship record, must have a reputation of high character and attainment in general all-around citizenship.

HELEN ALETTA LINTHICUM SCHOLARSHIPS—These scholarships, several in number, were established through the benefaction of the late Mrs. Helen Aleitta Linthicum, widow of the late Congressman Charles J. Linthicum, who served in Congress from the Fourth District of Maryland for many years. They are granted to worthy young men and women who are residents of the State of Maryland and who have satisfactory high school records, forceful personality, a reputation for splendid character and citizenship, and the determination to get ahead.

THE M CLUB GRANTS—The M Club of the University of Maryland provides each year a limited number of awards. They are granted by the Committee on Scholarships to applicants who show promise in sports other than football.

DR. FRANK C. MARINO SCHOLARSHIP—Dr. Frank C. Marino provides a \$200 annual scholarship in Nursing Education. As vacancies in this scholarship occur, it is awarded by the Committee on Scholarships to a student who demonstrates special interest and promise in this field.

MARYLAND ASSOCIATION OF CERTIFIED PUBLIC ACCOUNTANTS SCHOLARSHIP—A \$200 scholarship is awarded to a superior student in the College of Business and Public Administration who is concentrating in Accounting. This award is made through the College of Business and Public Administration in cooperation with the Committee on Scholarships.

MARYLAND EDUCATIONAL FOUNDATION GRANTS—The Maryland Educational Foundation provides funds each year for the education of several promising young men. These grants are awarded by the Committee on Scholarships to applicants who qualify under the provisions of the Foundation.

EUGENE F. AND AGNIS F. MIYER SCHOLARSHIPS—A number of scholarships is made available each year to promising students in meeting the costs of furthering their education, with preferential consideration to children of persons employed in public service, including service in the armed forces and the judiciary. The awards are made by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

MILLER CHEMICAL AND FERTILIZER CORPORATION SCHOLARSHIP—A \$250 scholarship has been made available for a student who needs financial aid, who has a farm background, and who has a major in Entomology, Plant Pathology, Agronomy, or Horticulture. The award is made by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

MORTAR BOARD SCHOLARSHIP—The Mortar Board Scholarship is awarded annually to a woman student on the basis of scholastic attainment, character, and need. The selection of the student for this award is made through the Office of the Dean of Women and a representative of Mortar Board in cooperation with the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

PANHELLENIC ASSOCIATION OF WASHINGTON, D. C., SCHOLARSHIP—A \$300 scholarship is awarded annually by the Panhellenic Association of Washington, D.C. This award is made to a member of a national Panhellenic Conference Sorority who in her sophomore or junior year has had a 3.0 average or better, who has done the most to promote good social relations among the sororities on the campus, and who is an outstanding leader in student affairs sponsored by the University. The award is made by the Committee on Scholarships in terms of the provisions of the grant.

PENINSULA HORTICULTURAL SOCIETY SCHOLARSHIP—The Peninsula Horticultural Society provides annually a \$200 scholarship to the most deserving junior or senior student, a resident of Maryland from the Eastern Shore counties, who is majoring in Horticulture or related subjects, particularly as they apply to the culture of fruits and vegetables. The award is made in cooperation with the Committee on Scholarships.

PHI BETA KAPPA SCHOLARSHIP—A \$250 scholarship is awarded to the student who at the end of the junior year has attained the highest cumulative average and whose basic course program has been in liberal studies.

THE PRICE WATERHOUSE FOUNDATION SCHOLARSHIPS—The Price Waterhouse Foundation offers two \$500 scholarships to exceptional senior students concentrating in accounting who are registered in the College of Business and Public Administration. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Business and Public Administration.

THE SEARS ROEBUCK FOUNDATION GRANTS—Ten grants of \$300 each are provided by the Sears Roebuck Foundation to the sons of Maryland farmers who enroll in the freshman class of the College of Agriculture. One \$300 grant is awarded each year to the sophomore student in the College of Agriculture who has proved to be the outstanding student holding a Sears Roebuck grant during the previous year. These grants are awarded annually by the Committee on Scholarships.

A limited number of similar grants from the Sears Roebuck Foundation is also available for students in the College of Home Economics.

SOUTHERN STATES COOPERATIVE SCHOLARSHIPS—Two scholarships are awarded each year to sons of Southern States members—one for outstanding work in 4-H Club and the other for outstanding work in FFA. The amount of each scholarship is \$300 per year and will continue for four years. These scholarships are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Agriculture.

JANIE G. S. TALIAFERRO SCHOLARSHIP—Under the terms of the will of the late Janie G. S. Taliaferro a bequest has been made to the University of Maryland to provide scholarship aid to worthy students. The income of the estate amounting to \$350 annually is used as a scholarship to a worthy young man or young woman who qualifies. The award is made by the Committee on Scholarships and Grants-in-Aid in accordance with the general principles underlying the award of all other scholarships.

J. MC KENNY WILLIS AND SON GRANT—A grant of \$500 is made available annually by J. McKenny Willis and Son, Inc., Grain, Feed and Seed Company of Easton, Maryland, to an outstanding student in vocational agriculture in Talbot County who will matriculate in the College of Agriculture. This grant is assigned by the Committee on Scholarships in accordance with the terms of the award. Application blanks for this grant may be procured at the office of the County Superintendent of Schools of Talbot County or by writing directly to the Chairman of the Committee on Scholarships.

WASHINGTON STEWARDS' EDUCATIONAL SCHOLARSHIP FUND—This fund provides grants to be awarded to a junior or senior who is preparing for a career as a food manager or dietitian. These grants are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Department of Foods and Nutrition of the College of Home Economics.

WESTERN ELECTRIC SCHOLARSHIP—This scholarship is awarded to a student in the College of Engineering. The amount of the scholarship covers cost of tuition, books and fees not to exceed \$800 nor to be less than \$400. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

WESTINGHOUSE AIR ARM DIVISION SCHOLARSHIP—The Westinghouse Electric Corporation has established a scholarship to encourage outstanding students of engineering and the physical sciences. The scholarship is awarded to a sophomore student and is paid over a period of three years in six installments of \$250. Students in electrical or mechanical engineering, engineering physics or applied mathematics are eligible for the award. Selection of the recipient is based on achievement as reflected by scholastic standing and general college record. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

THE ARTHUR YOUNG AND CO. FOUNDATION, INC. SCHOLARSHIP—The Arthur Young and Co. Foundation, Inc., makes available a scholarship of \$750 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration. This award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Business and Public Administration.

STUDENT LOANS

NDEA STUDENT LOANS—The National Defense Education Act of 1958 provides funds for student loans. A student may borrow in one year a sum not exceeding \$1,000 and during his entire course of study may borrow a sum not exceeding \$5,000. The borrower must sign a note for the loan and agree to interest and repayment terms established by the University. Repayment of the loan begins one year after the borrower ceases to be a full time student and must be completed within ten years thereafter. No interest is charged on the loan until the beginning of the repayment schedule. Interest after that date is to be paid at the rate of 3 percent per annum.

The National Defense Education Act contains a provision which provides that up to fifty percent of a student loan plus interest may be cancelled in the event the borrower becomes a full time elementary or secondary school teacher. Such cancellation is to be at the rate of 10 percent a year to five years.

CATHERINE MOORE BRINKLEY LOAN FUND—Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

FOR ADDITIONAL INFORMATION

Admission, Housing DIRECTOR, OFFICE OF ADMISSIONS
NORTH ADMINISTRATION BUILDING

Scholarships and Grants-in-aid DIRECTOR, OFFICE OF SCHOLARSHIPS
AND GRANTS-IN-AID
NORTH ADMINISTRATION BUILDING

Counseling OFFICE OF THE DEAN OF MEN
NORTH ADMINISTRATION BUILDING
OFFICE OF THE DEAN OF WOMEN
NORTH ADMINISTRATION BUILDING
UNIVERSITY COUNSELING SERVICE
BUILDING EE

Specific Program Information OFFICE OF THE DEAN OF THE RESPECTIVE
COLLEGES
TO COMPLETE THE MAIL ADDRESS FOR
THESE OFFICES, ADD:

UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND

COLLEGE
of
AGRICULTURE

Catalog Series 1961-1962



UNIVERSITY OF MARYLAND

VOLUME 16

DECEMBER 16, 1960

NO. 9

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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
20 Friday—Inauguration Day, Holiday
25 Wednesday—Pre-Examination Study Day
Jan. 26 } Thursday to Wednesday, inclusive—Fall Semester Examinations
Feb. 1 }

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
13 Monday—Instruction Begins
22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
4 Sunday—Baccalaureate Exercises
3-9 Saturday to Friday, inclusive—Spring Semester Examinations
10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

*Term
Expires*

CHARLES P. McCORMICK	
<i>Chairman</i>	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER	
<i>Vice-Chairman</i>	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN	
<i>Secretary</i>	1967
The Baltimore Institute, 10 West Chase Street, Baltimore	
HARRY H. NUTTLE	
<i>Treasurer</i>	1966
Denton	
LOUISE L. KAPLAN	
<i>Assistant Secretary</i>	1961
5800 Park Heights Avenue, Baltimore 15	
C. EWING TUTTLE	
<i>Assistant Treasurer</i>	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
RICHARD W. CASE	1967
Commercial Credit Building, Baltimore	
THOMAS W. PANGBORN	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
WILLIAM C. WALSH	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST	1967
4101 Greenway, Baltimore 18	

Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

OFFICERS OF ADMINISTRATION

Principal Administrative Officers

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;
D.PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1949.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

Emeriti

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women, Emeritus*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

Administrative Officers of the Schools and Colleges

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland, 1917.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930; Diplome le l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; PH.D., (HON.), University of Louisville, 1946.

General Administrative Officers

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AXLESWORTH, *Professor of Air Science and Head, Department of Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

- B. JAMES BORRESON, *Executive Dean for Student Life*
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- HELEN E. CLARKE, *Dean of Women*
B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; ED.D., Teachers College, Columbia University, 1960.
- WILLIAM W. COBEY, *Director of Athletics*
A.B., University of Maryland, 1930.
- LESTER M. DYKE, *Director of Student Health Service*
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
- GEARY F. EPPLEY, *Dean of Men*
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- HARRY D. FISHER, *Comptroller and Budget Officer*
B.S., University of Maryland, 1943.
- GEORGE W. FOGG, *Director of Personnel*
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*
B.S., University of Maryland, 1933.

Division Chairmen

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- CHARLES E. WHITE, *Chairman of the Lower Division*
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

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GENERAL COMMITTEE ON STUDENT LIFE AND WELFARE

Dr. L. Morris McClure (Education), *Chairman*

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COMMITTEE ON SCHEDULING AND REGISTRATION

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COMMITTEE ON UNIVERSITY PUBLICATIONS

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Dr. John E. Foster (Agriculture), *Chairman*

COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM, AND TENURE

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COMMITTEE ON MEMBERSHIP AND REPRESENTATION

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Dr. Harold F. Sylvester (Business and Public Administration), *Chairman*

COMMITTEE ON THE FUTURE OF THE UNIVERSITY

Dr. Augustus J. Prahl (Graduate School), *Chairman*

Adjunct Committees of the General Committee on Student Life and Welfare

STUDENT ACTIVITIES

Dr. Conrad Link (Agriculture), *Chairman*

FINANCIAL AIDS AND SELF-HELP

Dr. Paul E. Nystrom (Agriculture), *Chairman*

STUDENT PUBLICATIONS AND COMMUNICATIONS

Prof. Warren Strausbaugh (Arts and Sciences), *Chairman*

RELIGIOUS LIFE

Dr. Redfield Allen (Engineering), *Chairman*

STUDENT HEALTH AND SAFETY

Dr. M. H. Eyler (Physical Education), *Chairman*

STUDENT DISCIPLINE

Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krah1 (Medicine), *Chairman*

THE COLLEGE

THE COLLEGE OF AGRICULTURE OFFERS AN EDUCATIONAL PROGRAM DESIGNED to prepare students for careers in agricultural sciences, agricultural technology and agricultural business. Students receive a basic fundamental and cultural education, correlated with technical agricultural courses and related sciences.

HISTORY

The College of Agriculture is the oldest division of the University of Maryland at College Park. The institution was chartered in 1856 under the name of the Maryland Agricultural College. For three years the College was under private management. When Congress passed the Land Grant Act in 1862, the General Assembly of Maryland accepted it for the state and named the Maryland Agricultural College as the beneficiary. When the institution was merged in 1920 with the University of Maryland in Baltimore, the College of Agriculture took its place as one of the major divisions of this larger, more comprehensive organization.

In addition to teaching, the College of Agriculture includes the Agricultural Experiment Station and the Extension Service. They were established as the result of acts passed by Congress in 1887 and 1914 respectively. A more complete description of these two services appears later in this bulletin.

General Information

Graduates of the College of Agriculture are trained for employment in scientific areas related to agriculture, in agricultural business and industry or with a local, state or federal agency. Curricula in the College of Agriculture provide for broad training in cultural and scientific courses as well as in courses related to various areas of agricultural specialization. Programs are offered for: (1) those planning to pursue the agricultural sciences and who plan to do graduate study; (2) those planning to pursue the business activities in agricultural and related industries, and (3) those planning to pursue the technology of animal and plant production, the engineering, chemistry, and food processing of agricultural products as well as teaching and extension in agriculture.

Many professors also conduct research studies in their respective fields. Through these studies the frontiers of knowledge are constantly being extended. These new findings are incorporated in courses thereby making the instruction in agriculture dynamic.

The close relationship of extension specialists, county agents, and home demonstration agents with farmers and farm families enables workers in the College to evaluate the farm situation. New farm problems are brought to the attention of the research worker and new developments are presented to farmers and their families.

The coordination of teaching, research and extension provides for the effective training of students in the College of Agriculture for a career in

agriculture. Many professors also contribute to the research and extension programs concerned with agriculture and food production, the development of new varieties and processing procedures, as well as adjustments in agricultural production and marketing.

Trained workers in the College of Agriculture, through regulatory and service activities, are constantly working with actual problems associated with the improvement and maintenance of standards for farm products. Regulatory and control work extends over a wide range of activities and is concerned with reducing losses due to insect pests and diseases; preventing and controlling serious outbreaks of diseases and pests of animals and plants; analyzing fertilizer, feed and lime for guaranteed quality; and analyzing and testing germination quality of seeds to insure better seeds for farm planting. Marketing services include federal-state inspection, fresh egg law, dairy inspection, seed inspection, weight and measures and market news service.

SPECIAL ADVANTAGES

The University of Maryland is within a few miles of the Agricultural Research Center of the United States Department of Agriculture. This is the largest, best manned, and best equipped agriculture research agency in the world. Also, the University of Maryland is within a few miles of the Washington, D. C., offices of the Department of Agriculture and other government departments, including the Library of Congress. Students can easily visit these agencies and become acquainted with their work and the men who conduct this work. Such contacts have proved valuable to many University of Maryland graduates.

Also, it is not uncommon for men from these agencies to speak before classes at the University and to be guest speakers at student club meetings and otherwise take part in student activities. No other college of agriculture in the United States is physically located to offer like opportunities to its students.

COORDINATION OF AGRICULTURAL WORK

The strength of the College of Agriculture of the University of Maryland lies in the close coordination of the instructional, research, extension, and regulatory functions within the individual departments, between the several departments, and in the institution as a whole. Instructors in the several departments are closely associated with the research, extension and regulatory work being carried on in their respective fields, and in many cases, devote a portion of their time to one or more of these types of activities. Close coordination of these four types of work enables the University to provide a stronger faculty in the College of Agriculture, and affords a higher degree of specialization than would otherwise be possible. It insures instructors an opportunity to keep informed on the latest results of research, and to be constantly in touch with current trends and problems which are revealed in extension and regulatory activities. Heads of departments hold staff conferences to this end,

so that the student at all times is as close to the developments in the frontiers of the several fields of knowledge as it is possible for an organization to put him.

In order that the work of the College shall be responsible to agricultural interests and shall adequately meet the needs of the several agricultural industries in the state, and that the course of instruction shall at all times be made most helpful for students who pursue them, advisory councils have been constituted in the major industries of agriculture. The councils are composed of leaders in the respective lines of agriculture has the benefit of their council and advice. By this means the College, the industries, and the students are kept abreast of developments.

FACILITIES AND EQUIPMENT

In addition to buildings, laboratories, libraries, and equipment for effective instruction in the related basic sciences and in the cultural subjects, the University of Maryland is provided with excellent facilities for research and instruction in agriculture. University farms, totaling more than 2,000 acres, are operated for instructional and investigational purposes. One of the most complete and modern plants for dairy and animal husbandry work in the country, together with herds of the principal breeds of dairy and beef cattle, and other livestock, provides facilities and materials for instruction and research in these industries. Excellent laboratory and field facilities are available in the Agronomy Department for breeding and selection in farm crops, and for soils research. The Poultry Department has a building for laboratories and classrooms, a plant comprising twenty acres, and flocks of the important breeds of poultry. A research farm is available for experimental testing under field conditions. The Horticulture Department is housed in a separate building, and has ample orchards, gardens and greenhouses for its various lines of work. A research farm is located near Salisbury where experimental work is carried on in the area of intense production.

COSTS

Actual annual costs of attending the University include: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A charge of \$300.00 is assessed to all students who are non-residents of the State of Maryland.

A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

Complete information regarding costs is available in the publication, an *Adventure in Learning*.

General Information

AIR SCIENCE

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of Air Science training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning Air Science, refer to *University General and Academic Regulations*, a publication mailed in September and February of each year to all new undergraduate students.

SCHOLARSHIPS AND GRANTS-IN-AID FOR AGRICULTURAL STUDENTS

A limited number of scholarships are available for agricultural students. These include awards granted by the Sears Roebuck Foundation, the Borden Company, Dr. Ernest N. Cory Trust Fund, the Danforth Foundation, the Ralston Purina Company, Southern States Cooperative, Inc., J. McKenny Willis and Sons, Dairy Technology Society of Maryland and District of Columbia, Miller Chemical and Fertilizer Corporation, and Peninsula Horticultural Society.

These scholarships and grants-in-aid are awarded by the Faculty Committee in accordance with the terms of the respective grants. More detailed information about these awards is contained in the publication *An Adventure in Learning*.

STUDENT ORGANIZATIONS

Students find opportunity for varied expression and growth in the several voluntary organizations sponsored by the College of Agriculture. These organizations are: Agricultural Economics Club, Block and Bridle Club, Collegiate 4-H Club, Dairy Science Club, Student Institute of Food Technology, Future Farmers of America, Agronomy Club, Riding Club, Poultry Science Club, and the Veterinary Science Club.

Alpha Zeta is a national agricultural honor fraternity. Members are chosen from students in the College of Agriculture who have met certain scholastic requirements and displayed leadership in agriculture.

The Agricultural Student Council is made up of representatives from the various student organizations in the College of Agriculture. Its purpose is to coordinate activities of these organizations and to promote work which is beneficial to the College.

STUDENT JUDGING TEAMS

The College of Agriculture sponsors judging teams for dairy cattle, dairy products, horticultural products, livestock, meats and poultry. Team members are selected from students taking courses designed especially to train them for this purpose. Teams are entered in major contests where the students compete with teams from other state universities or agricultural colleges.

FOR ADDITIONAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean
(College in which you are interested)
The University of Maryland
College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean
(School in which you are interested)
The University of Maryland
Lombard and Greene Streets
Baltimore 1, Maryland

Awards

ALPHA ZETA MEDAL

The honorary agricultural fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work. The presentation of the medal does not elect the student to the fraternity, but simply indicates recognition of high scholarship.

APPLEMAN-NORTON AWARD

This award is made annually to a senior for excellence in botany.

Awards, Academic Information

CARROLL E. COX AWARD

This cash award is made annually to the most outstanding graduate student in the Department of Botany.

GRANGE AWARD

The Maryland State Grange makes an annual award to the senior who has excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

NATIONAL BLOCK AND BRIDLE AWARD

The National Block and Bridle awards annually a plaque to the member of the Block and Bridle Club who has done the most for the local club during the year.

NATIONAL PLANT FOOD INSTITUTE AWARD

National Plant Food Institute awards annually the Agronomy Achievement Award to the outstanding junior or senior student in Agronomy. The amount of award is \$200.

VIRGINIA DARE AWARD

The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an over-all good standing in dairy.

EDGAR P. WALLS AWARD

Dr. Edgar P. Walls awards annually a gold watch to the senior doing outstanding work in horticultural processing.

Academic Information

DEPARTMENTS AND CURRICULA

Departments in the College of Agriculture and their curricula are as follows: Agricultural Economics (including agricultural business); Agricultural and Extension Education; Agricultural Engineering; Agronomy (including crops and soils); Animal Husbandry; Botany (plant morphology and taxonomy, plant pathology, and plant physiology and ecology); Dairy (dairy husbandry and dairy technology); Entomology (including bee culture); Horticulture (pomology, olericulture, floriculture, ornamental horticulture and commercial processing); Poultry Husbandry; Veterinary Science. In addition, there are curricula in Agricultural Chemistry and General Agriculture. Courses of study may also be arranged for any who desire to return to the farm after one or more years of training in practical agricultural subjects.

ADMISSION

All students desiring to enroll in the College of Agriculture must apply to the Director of Admissions of the University of Maryland at College Park.

The high school or preparatory school student who intends to apply for admission to the University should plan his secondary school program carefully. He should select a program that will prepare him adequately to begin college work at the college level. He should allow for the fact that his interests may change by selecting a secondary school program that will enable him, when he enters the University, to have a maximum freedom of choice among the various curricula offered at the University.

Every candidate for admission to the University must normally present sixteen units of high school subjects. It is required that seven of the minimum sixteen units be in college preparatory subjects as follows:

English	4 units
Mathematics (preferably algebra)	1 unit
History or Social Sciences	1 unit
Biological or Physical Sciences	1 unit

The other units should be chosen to give the student as strong a preparation as possible for his work at the University. At least twelve of the units presented should be in college preparatory courses in academic subjects. Although there is no entrance requirement in foreign languages, two or more units are highly desirable for many programs and are suitable for all programs. Likewise it is desirable that each student offer two units in history or social sciences, and two units in the biological and physical sciences. It is strongly recommended that all students present a unit of plane geometry in addition to the one or two units of algebra.

It is recommended that the preparatory program in high school include:

English	4 units
Mathematics (college preparatory).....	2 units
(Agricultural Engineering and Agricultural Chemistry— try—2 additional units)	
Biological and physical sciences.....	3 units
History or social sciences.....	2 units

Two units of foreign language are recommended for students in Agricultural Engineering, Agricultural Chemistry, Botany and Entomology.

Deviation from these recommendations is permitted, but should be undertaken only upon competent advice. An unwise selection of preparatory courses can effectively prevent the student from pursuing certain curricula at the University or materially increase the time necessary to complete a particular curriculum. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program he might conceivably wish to enter. A special fee will be charged for all remedial work in mathematics with the exception of the course in solid geometry.

A well-planned program of college preparatory work contributes much to the success of a student in his college work. This fact has an important

Academic Information

bearing in estimating whether a candidate for admission is likely to be successful in his work at the University.

JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "O" credit shall not be included; in every course only the most recent grade shall be counted; courses in the basic R.O.T.C., the physical education required of all University students, and the health courses required of all women students (i.e., the courses numbered A. S. 1, 2, 3, 4; P. E. 1, 2, 3, 4, 5, 6, 7, 8; Hea. 2, 4) shall *not* be included, but courses in the advanced R.O.T.C. and courses in health or physical education which are taken as electives shall be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

REQUIREMENTS FOR GRADUATION

Each student must acquire a minimum of 120 semester hour credits in academic subjects other than basic air science and physical activities. Men must complete the required Basic Air Science and 4 hours in physical activities. Women must acquire in addition 4 hours in hygiene, and 4 hours in physical activities.

STUDENT ADVISERS

Each student in the College of Agriculture is assigned to a faculty adviser, either departmental or general. Departmental advisers consist of heads of departments or persons selected by them to advise students with curricula in their respective departments. General advisers are selected for students who have no definite choice of curriculum in mind, or who wish to pursue the general curriculum in agriculture.

ELECTIVES

The electives in the suggested curricula which follow affords opportunity for those who so desire to supplement major and minor fields of study or to add to their general education.

With the advice and consent of those in charge of his registration, a student may make such modifications in his curriculum as are deemed advisable to meet the requirements of his particular need.

FIELD AND LABORATORY PRACTICE

The head of each department will help to make available opportunities for practical or technical experience along his major line of study for each student whose major is in that department and who is in need of such experience. For inexperienced students in many departments this need may be met by one or more summers spent on a farm.

FRESHMAN YEAR

The program of the freshman year in the College of Agriculture is the same for all curricula of the College. Its purpose is to afford the student an opportunity to lay a broad foundation in subjects basic to agriculture and the related sciences, to articulate beginning work in college with that pursued in high or preparatory schools, to provide opportunity for wise choice of programs in succeeding years, and to make it possible for a student before the end of the year to change from one curriculum to another, or from the College of Agriculture to a curriculum in some other college of the University with little or no loss of credit.

Students entering the freshman year with a definite choice of curriculum in mind are sent to departmental advisers for counsel as to the wisest selection of freshman electives from the standpoint of their special interests and their probable future programs. Students entering the freshman year with no definite curriculum in mind, are assigned to a general adviser, who assists with the choice of freshman electives and during the course of the year acquaints the students with opportunities in the upper curricula in the College of Agriculture and in the other divisions of the University. If by the close of the freshman year a student makes no definite choice of a specialized curriculum, he continues under the guidance of his general adviser in the General Agriculture curriculum.

CURRICULA

AGRICULTURE CURRICULUM

All students in the College of Agriculture are required to complete a series of courses to satisfy University requirements, College requirements and departmental requirements. The remaining courses needed to complete a program of study are elected by the student with the approval of his adviser.

<i>University Requirements:</i>	<i>Semester Credit Hours</i>
Eng. 1, 2—Composition and American Literature ¹	6
G. & P. 1—American Government ¹	3
Soc. 1—Sociology of American Life or alternate ¹	3
Eng. 3, 4—Composition and World Literature or	
Eng. 5, 6—Composition and English Literature	6
H. 5, 6—History of American Civilization ¹	6
FOR MEN:	
Basic Air Science.....	5*
Physical Activities	4
FOR WOMEN:	
Hea. 2—Personal Health	2
Hea. 5—Community Health	2
Physical Activities	4

College of Agriculture Requirements:

Chem. 1, 3—General Chemistry.....	8
Speech 7—Public Speaking.....	2
Agr. 1—Introduction to Agriculture.....	1

ELECT TWO OF THE FOLLOWING:

- Bot. 1—General Botany (4)
- Zool. 1—General Zoology (4)
- Microb. 1—General Microbiology (4)

Students failing to pass the pre-registration test in mathematics will be required to take Math. 0.

Students expecting to pursue the curriculum in either Agricultural Chemistry or Agricultural Engineering should, if qualified, take Math. 18 or 19. If not qualified they should take Math. 1.

Departmental Requirements 77

Required courses are determined by the department for each specific curriculum and elective courses are approved by the adviser of the student's program.

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹For classification tests and alternate courses, see Program in American Civilization section published in *University General and Academic Regulations*.

General Agriculture Curriculum

A program of courses for the freshman year is essentially the same for all students. However, there are some variations in several curricula.

<i>Freshman Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature	3	3
G. & P. 1—American Government	3	..
Soc. 1—Sociology of American Life or alternate .....	..	3
Agr. 1—Introduction to Agriculture	1	..
Bot. 1—General Botany	4	..
Zool. 1—General Zoology .....	..	4
A. H. 1—Fundamentals of Animal Husbandry	3	..
Agron. 1—Crop Production .....	..	3
A. S. 1, 2—Basic Air Science (men).....	½*	2
Physical Activities (men and women).....	1	1
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2

AGRICULTURE—GENERAL

This curriculum is designed for persons wishing to return to the farm, enter work allied to farming, for those seeking a general rather than a specialized knowledge of the field of agriculture and for those preparing to work in any general field in agriculture or agri-business.

By proper use of the electives allowed in this curriculum, a student may choose a field of concentration in agriculture and at the same time elect courses that contribute to a liberal education.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>General Agricultural Requirements:</i>	<i>Semester Credit Hours</i>
A. E. 107—Analysis of the Farm Business	3
A. E. 108—Farm Management	3
R. Ed. 114—Rural Life and Education.....	3
Agr. Engr. 56—Introduction to Farm Mechanics.....	2
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 121—Agricultural Machinery Laboratory.....	1
Agron. 10—General Soils	4
Agron. 107—Cereal Crop Production	3
Agron. 108—Forage Crop Production	3
Agron. 151—Cropping Systems	2
A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding	3

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

Agricultural Chemistry, Economics Curricula

	Semester Credit Hours
<i>General Agricultural Requirements: (Continued)</i>	
Bot. 20—Diseases of Plants.....	3
Dairy 1—Fundamentals of Dairying.....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Hort. 5 or 58—General Horticulture.....	3
P. H. 1—Poultry Production.....	3
Elect either of the following pairs of courses:	
Science Sequence	8
B. A. 20, 21—Principles of Accounting.....	6
Electives ¹	21

AGRICULTURAL CHEMISTRY

This curriculum insures adequate instruction in the fundamentals of both the physical and biological sciences. It may be adjusted through the selection of electives to fit the student for work in agricultural experiment stations, soil bureaus, geological surveys, food laboratories, fertilizer industries and those handling food products.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Agricultural Chemistry Requirements:</i>	Semester Credit Hours
Chem. 15—Qualitative Analysis	4
Chem. 21—Quantitative Analysis	4
Chem. 35—Elementary Organic Lecture	2
Chem. 36—Elementary Organic Laboratory	2
Chem. 37—Elementary Organic Lecture	2
Chem. 38—Elementary Organic Laboratory	2
Chem. 123—Quantitative Analysis	4
Agron. 10—General Soils	4
Bot. 1—General Botany	4
Geol. 1—Geology	2
Math. 20—Calculus	4
Math. 21—Calculus	4
Modern Languages	12
Phys. 20—General Physics	5
Phys. 21—General Physics	5
Speech 7—Public Speaking.....	2
Zool. 1—General Zoology	4
Electives in Biology.....	6
Electives in Agricultural Chemistry.....	14

AGRICULTURAL ECONOMICS

This Department combines training in the business and economic aspects of agricultural production and marketing as well as the biological and physical

¹ Three-fourths of the electives must be 100 level courses.

sciences basic to agriculture. Programs are available for students in agricultural economics and in agricultural business. Students desiring to enter agricultural marketing, foreign service, or businesses affiliated with agriculture may elect the agricultural business option. Students interested primarily in the broad aspects of production and management as it relates to the operation of a farm business may elect the agricultural economics option. These programs train students for employment in agricultural business and industry, in positions of sales or management, with local, state or federal agencies, extension workers, college teachers, researchers, farm operators or farm managers.

Courses for the freshman and sophomore years are essentially the same for all students. In the junior year the student elects the agricultural economics or agricultural business option according to his particular interest. Courses in this Department are designed to provide training in the application of economic principles to the production, processing, distribution and merchandising of agricultural products as well as the inter-relationship of business and industry associated with agriculture in a dynamic economy. The curriculum includes courses in general agricultural economics, marketing, farm management, finance, prices, taxation, land economics, agricultural policy, and foreign agricultural trade.

University Requirements (see page 10)
College of Agriculture Requirements (see page 10)

	<i>Semester Credit Hours</i>
<i>Required of both options:</i>	
Econ. 31, 32—Principles of Economics.....	6
Math. 5—General Mathematics	3
A. E. 50—Economics of Agriculture.....	3
A. E. 101—Marketing of Agricultural Products.....	3
A. E. 106—Prices of Agricultural Products.....	3
A. E. 108—Farm Management	3
A. E. 110—Seminar	2
Agron. 10—General Soils	4
B. A. 130—Elements of Business Statistics.....	3
A. H. 110—Feeds and Feeding.....	3
<i>Agricultural Economics Option:</i>	
A. E. 104—Agricultural Finance	3
A. E. 107—Analysis of the Farm Business	3
A. E. 111—Land Economics	3
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 121—Agricultural Machinery Laboratory	1
Agron. 151—Cropping Systems	2
Dairy 1—Dairy Production or P. H. 1—Poultry Production.....	3

Agricultural and Extension Education Curriculum

Select three of the following courses:

A. E. 114—Foreign Trade in Farm Products.....	3
Geog. 10—General Geography	3
Agr. Engr. 102—Agricultural Tractors and Power Units	2
Agr. Engr. 122—Agricultural Tractors and Power Units Laboratory	1
A. H. 150—Livestock Markets and Marketing.....	3
Soc. 113—The Rural Community	3
Electives	18

Agricultural Business Option:

A. E. 103—Cooperation in Agriculture	3
A. E. 112—Economic Development of American Agriculture.....	3
A. E. 114—Foreign Trade in Farm Products	3
Geog. 10—General Geography	3
B. A. 20—Principles of Accounting.....	3
B. A. 150—Marketing Management	3

Select three of the following courses:

A. E. 119—Foreign Agricultural Economics	3
Econ. 132—Advanced Economic Principles	3
Econ. 140—Money and Banking	3
B. A. 151—Advertising	3
B. A. 180—Business Law	3
Electives	16

AGRICULTURAL AND EXTENSION EDUCATION

This Department combines a broad general training in agriculture with basic work in the natural sciences, the social sciences and the humanities.

Programs are available for students in agricultural education and agricultural extension. Students desiring to teach agriculture in secondary schools should elect the agricultural education option. Students interested primarily in agricultural extension may elect the agricultural extension option. Either option may lead to a variety of other educational career opportunities in rural businesses and agricultural agencies, as well as farm managers, research workers, and college teachers. Students interested in rural ministry often select this curriculum.

The courses for the freshman and sophomore years are essentially the same. In the junior and senior years courses may be selected in either extension methods or vocational agriculture teaching, according to the interest of the student.

In addition to the regular entrance requirements of the University, involving graduation from a standard four-year high school, students electing either curriculum must present evidence of having acquired adequate farm experience after reaching the age of fourteen years.

Agricultural and Extension Education Curriculum

All students following the agricultural education curriculum are required to attend meetings of the Collegiate Chapter of the Future Farmers of America during their junior and senior years in order to gain needed training to serve as advisers of high school chapters of FFA upon graduation. Freshmen and sophomore agricultural education majors are also urged to become members of the FFA and to participate in the activities of the organization.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

Required of both options:

	Semester Credit Hours
A. H. 1—Fundamentals of Animal Husbandry.....	3
Agron. 1—Crop Production.....	3
Dairy 1—Fundamentals of Dairying.....	3
P. H. 1—Poultry Production.....	3
Hort. 58—Vegetable Production	3
Bot. 20—Diseases of Plants.....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Agron. 10—General Soils.....	4
A. H. 110—Feeds and Feeding.....	3
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 102—Agricultural Tractors and Power Units	2
Agr. Engr. 121—Agricultural Machinery Laboratory	1
Agr. Engr. 104—Farm Mechanics	2
A. E. 108—Farm Management.....	3
H. D. Ed. 100, 101—Principles of Human Development I and II....	6
R. Ed. 101—Teaching Farm Practices and Demonstrations.....	3
R. Ed. 111—Teaching Young and Adult Farmer Groups.....	1
R. Ed. 114—Rural Life and Education.....	3
Science electives	6

Agricultural Education Option:

R. Ed. 107—Observation and Analysis of Teaching Agriculture.....	3
R. Ed. 103—Practice Teaching ¹	5
R. Ed. 109—Teaching Secondary Vocational Agriculture.....	3
R. Ed. 112—Departmental Management	1
Agriculture electives	6

Agricultural Extension Option:

R. Ed. 150—Extension Education	2
R. Ed. 160—Agricultural Communication	2
R. Ed. 161—4-H Organization and Procedure.....	2
Electives	12

¹ Majors in agricultural education are also required to take R. Ed. 104—Practice Training (4) (or its equivalent), to be arranged in a four-week period prior to the opening of the University of Maryland in the fall of their senior year.

AGRICULTURAL ENGINEERING

This Department offers an educational program in agricultural engineering technology for students in the College of Agriculture. These subjects may be grouped under five general classifications, farm power and machinery, farm structures, soil and water conservation engineering, farm electrification, and mechanics and equipment for agricultural materials handling and processing. The technological aspects covered in these courses are designed to complement the education received by students in other departments of the College of Agriculture.

Agricultural engineering, in the broadest sense, is the science of combining forces and materials of nature for the benefit of agriculture; as implied, an understanding of soil, plant, and animal sciences is the basis for intelligent applications of engineering principles in all phases of the agricultural industry. Because interrelated applications of all branches of engineering are found in agriculture, or even on a single, diversified farm, education for the profession is necessarily founded on a broad base of mathematical, physical and engineering science complemented by basic agricultural sciences. Although boundaries between generally recognized fields of engineering overlap in agricultural applications, the scope of the field together with personal preference generally leads to specialization in one of the four major areas of the profession.

The field of farm power and machinery offers opportunities to agricultural engineers specifically interested in agricultural mechanization. The farm equipment industry employs many graduates who conceive, design, develop, and test new power units and machines. Others are employed in distribution: sales, sales promotion or service.

Electric power and processing is concerned with productive applications of electricity in farm production and in other phases of the agricultural industry. Electricity is used not only for light and power but also for heating and cooling processes and for automatic control and operation of equipment. Agricultural engineers with such interests are employed by electric power suppliers and crop processing organizations.

Farm structure specialists are interested in farm buildings for structural design and functional use. Environmental requirements of animal shelters, crop storage and processing structures include control of temperature, humidity, and air movement for efficient utilization. Design must accommodate heat and moisture of respiration from animal or vegetable origin. Manufacturers and fabricators of structural units and facilities employ agricultural engineers for research and educational programs to promote their products.

Agricultural engineers specializing in soil and water control and conservation utilize hydraulics in irrigation, drainage, and soil erosion. Knowledge of how water flows over or through soil or infiltrates into soil are the tools of the engineer, but use of these tools is influenced by soil-moisture-plant relationships.

Farm management companies employ engineers to design soil and water conservation and other engineering systems for farms under their supervision or for individual farmers. Other sources of employment include contracting, farm management, irrigation equipment design or sales and service, and related enterprises.

State and federal institutions and agencies conduct programs of education and research in all areas of agricultural engineering. Research findings are frequently established in the agricultural industry through programs of action agencies such as the Agricultural Extension Service or the Soil Conservation Service. The agencies offer many opportunities for work in the field.

AGRICULTURAL ENGINEERING CURRICULUM

University Requirements (see page 10)

<i>Freshman Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
Dr. 1—Engineering Drawing.....	..	3
Chem. 1, 3—General Chemistry.....	4	4
Math. 18, 19—Elementary Mathematical Analysis ¹	5	5
Agr. 1—Introduction to Agriculture.....	1	..
Agr. Engr. 2—Orientation in Agricultural Engineering.....	0	..
A. S. 1, 2—Basic Air Science	½*	2
Physical Activities	1	1
Total.....	14½	18

<i>Agricultural Sciences</i>	<i>Semester Credit Hours</i>
Agr. 1—Introduction to Agriculture.....	1
Agron. 1—Crop Production	3
Agron. 10—General Soils	4
A. H. 1—Fundamentals of Animal Husbandry; or P. H. 1—Poultry Production; or Dairy 1—Fundamentals of Dairying.....	3
Agron. 117—Soil Physics (optional).....	(3)

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 18. A student failing this test is required to take Math. 1, Introductory Algebra, without credit. (Special Fee, \$30.00.)

Agricultural Engineering

	Semester Credit Hours
<i>Agricultural Engineering</i>	
Agr. Engr. 2—Orientation in Agricultural Engineering.....	0
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 102—Agricultural Tractors and Power Units.....	2
Agr. Engr. 105—Farm Structures	2
Agr. Engr. 107—Soil and Water Conservation Engr.....	1
Agr. Engr. 109—Farm Applications of Electricity.....	1
Agr. Engr. 131—Agricultural Machinery Design Laboratory.....	1
Agr. Engr. 132—Farm Power Analysis Laboratory.....	1
Agr. Engr. 135—Farm Structures Design Laboratory.....	1
Agr. Engr. 137—Soil and Water Conservation Engr. Lab.....	1
Agr. Engr. 139—Farm Electrification Engr. Lab.....	1
Agr. Engr. 199—Seminar	1

Basic Sciences

Chem. 1, 3—General Chemistry.....	8
Math. 18, 19—Elementary Mathematical Analysis ¹	10
Math. 20, 21—Calculus	8
Math. 64—Differential Equations for Engineers.....	3
Phys. 20, 21—General Physics.....	10

Engineering Sciences

Required

Dr. 1, 2—Engineering Drawing.....	5
C. E. 21 or M. E. 22—Statics.....	3
C. E. 23 or M. E. 23—Strength of Mechanics of Materials.....	3
C. E. 24 or M. E. 24—Dynamics.....	3
C. E. 110—Surveying I	3
C. E. 140 or M. E. 102—Fluid Mechanics.....	3
C. E. 160—Structural Design	4
E. E. 51, 52—Principles of Electrical Engineering.....	8
M. E. 20, 21—Manufacturing Tools and Processes.....	2
M. E. 100—Thermodynamics.....	3

Technical Electives

Students will select Series A, B, or C

Series A

C. E. 30—Materials of Engineering.....	3
C. E. 161—Structural Design	4
C. E. 162—Structural Analysis; or	
C. E. 142—Advanced Fluid Mechanics.....	3
C. E. 163—Structural Analysis	3

Note: Student selecting Series A to take Agron. 117.

¹ A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 18. A student failing this test is required to take Math. 1, Introductory Algebra, with credit. (Special Fee \$30.00)

<i>Series B</i>	<i>Semester Credit Hours</i>
M. E. 101—Heat Transfer	3
M. F. 103—Metallography	3
M. E. 104—Kinematics	2
M. E. 152—Mechanical Engineering Design or.....	4
M. E. 156—Heating and Air Conditioning.....	(3)
M. E. 153—Mechanical Engineering Design; or	
M. E. 157—Refrigeration	3
<i>Series C</i>	
E. E. 65—Direct-Current Machinery	3
E. E. 100—Alternating-Current Circuits	4
E. E. 101—Engineering Electronics	4
E. E. 107—Electrical Measurements	4

AGRONOMY—CROPS AND SOILS

The Department of Agronomy offers instruction in production and breeding of forage crops, cereal crops, and tobacco; weed control; soil chemistry; soil fertility; soil physics; soil classification; and soil conservation. A technical or a general curriculum may be elected by a student in either crops or soils. The technical curricula provide training in basic courses which will increase the students understanding of the applied crops and soils courses. Training in these basic courses is required for advanced work in agronomy and is desired by many employers of students graduating in agronomy.

General curricula in crops and soils permit the student to confine his training to applied courses but students following these curricula are encouraged to elect some of the basic courses included in the technical curricula.

Depending on the electives chosen, students graduating in agronomy are well prepared for advanced study, trained for general farming, farm management, specialized seed production, extension work, soil conservation, or employment with commercial seed, fertilizer, chemical or farm equipment companies. Additional information on opportunities in agronomy may be obtained by writing to the Department of Agronomy.

CROPS

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Department of Agronomy Requirements:</i>	<i>Semester Credit Hours</i>
Agron. 10—General Soils	4
Agron. 101—Senior Seminar in Agronomy.....	1
Agron. 103—Crop Breeding	2
Agron. 107—Cereal Crop Production	3
Agron. 108—Forage Crop Production	3
Agron. 151—Cropping Systems	2

Agronomy—Crops and Soils

Agron. 154—Weed Control	3
Agron. —Advanced Soils Courses	6
Bot. 11—Plant Taxonomy	3
Bot. 20—Diseases of Plants.....	3
Bot. 101—Plant Physiology	4
Bot. 117—General Plant Genetics or	
Zool. 104—Genetics	2 or 3
Technical and General Courses for Crops Students	
(see explanation and lists below).....	29
Electives	12

TECHNICAL CROPS CURRICULUM

A minimum of 20 of the 29 hours of technical and general courses required above must be selected from the technical courses. If the student desires to take more than 29 hours of technical courses they can be used as part of his 12 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the crops adviser.

GENERAL CROPS CURRICULUM

Same as Technical Crops Curriculum except that the 20-hour minimum of courses from the technical group does not apply.

<i>Technical Courses Which May be Selected by the Crops Student</i>	<i>Semester Credit Hours</i>
Math. 10—Algebra	3
Math. 11—Trigonometry and Analytic Geometry.....	3
Math. 13—Elements of Mathematical Statistics.....	3
Math. 18, 19—Elementary Mathematical Analysis.....	5, 5
Math. 20, 21—Calculus	4, 4
Chem. 15—Qualitative Analysis	4
Chem. 19—Elements of Quantitative Analysis.....	4
Chem. 31, 33—Elements of Organic Chemistry	2, 2
Chem. 32, 34—Elements of Organic Laboratory	1, 1
Phys. 10, 11—Fundamentals of Physics.....	4, 4
Bot. 102—Plant Ecology	3
Bot. 111—Plant Anatomy	3
Agr. 100—Introductory Agricultural Biometrics.....	3

General Courses Which May be Selected by the Crops Student

A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding	3
A. E. 50—Economics of Agriculture.....	3
A. E. 108—Farm Management	3
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 121—Agricultural Machinery Laboratory	1
Ent. 1—Introductory Entomology	3
Ent. 20—Insect Pests of Agriculture Crops.....	4
Zool. 1—General Zoology	4
Geog. 40—Principles of Meteorology.....	3

Geog. 41—Introductory Climatology	3
Hort. 5—Fruit Production	3
Hort. 58—Vegetable Production	3
Agron.—Soils or crops courses not previously required.....	10

SOILS

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Department of Agronomy Requirements:</i>	<i>Semester Credit Hours</i>
Agron. 10—General Soils	4
Agron. 107—Cereal Crop Production	3
Agron. 108—Forage Crop Production	3
Agron. 114—Soil Classification and Geography.....	4
Agron. 116—Soil Chemistry	3
Agron. 117—Soil Physics	3
Agron.—Additional Advanced Soils courses.....	6
Bot. 101—Plant Physiology.....	4
Technical and general courses for soils students (see explanation and lists below).....	35
Electives	12

TECHNICAL SOILS CURRICULUM

A minimum of 30 of the 35 semester hours of technical and general courses required above must be selected from the technical group. If the student desires to take more than 35 semester hours of technical courses they can be used as part of his 12 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the soils adviser.

GENERAL SOILS CURRICULUM

Same as Technical Soils Curriculum except that the 30-hour minimum of courses from the technical group does not apply.

<i>Technical Courses Which May be Selected by the Soils Student</i>	<i>Semester Credit Hours</i>
Math. 10—Algebra	3
Math. 11—Trigonometry and Analytic Geometry.....	3
Math. 18, 19—Elements of Mathematical Analysis.....	5, 5
Math. 20, 21—Calculus	4, 4
Math. 64—Differential Equations for Engineers.....	3
Chem. 15—Qualitative Analysis	4
Chem. 19—Quantitative Analysis	4
Chem. 35, 37—Elementary Organic Chemistry	2, 2
Chem. 36, 38—Elementary Organic Laboratory	2, 2
Phys. 10, 11—Fundamentals of Physics or.....	4, 4
Phys. 20, 21—General Physics	5, 5
Agr. 100—Introductory Agricultural Biometrics.....	3

Animal Husbandry

General Courses Which May be Selected by the Soils Student

A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding	3
T. E. 50—Economics of Agriculture.....	3
A. E. 108—Farm Management	3
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 121—Agricultural Machinery Laboratory	1
Agr. Engr. 56—Introduction to Farm Mechanics.....	2
Agr. Engr. 107—Soil and Water Conservation Engineering	1
Agr. Engr. 127—Soil and Water Conservation Laboratory	1
Zool. 1—General Zoology	4
Zool. 104—Genetics	3
Bot. 11—Plant Taxonomy	3
Bot. 20—Diseases of Plants.....	3
Bot. 102—Plant Ecology	3
Bot. 117—General Plant Genetics.....	2
Ent. 1—Introductory Entomology	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Geog. 40—Principles of Meteorology	3
Geog. 41—Introductory Climatology	3
Hort. 5—Fruit Production	3
Hort. 58—Vegetable Production	3
Microb. 135—Soil Microbiology	4
Agron.—Any advanced agronomy courses not previously required....	10

ANIMAL HUSBANDRY

The curriculum in animal husbandry is organized for the purpose of preparing students for various phases of work in the field of animal industry such as: operators and managers of livestock farms, as investigators and research workers in federal, state, and private institutions, and as workers in specialized fields where a knowledge of the livestock industry is necessary.

By proper use of electives, the student may equip himself to become a county agricultural agent; to meet the requirements of positions with certain types of private and cooperative business concerns; or, with more technical and specialized training, to become qualified for instructional work in colleges, for investigational work in state and federal experiment stations or in commercial research laboratories. Students who desire to enter the field of teaching of highly specialized research should elect the more scientific course offered by this and by other departments.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Department of Animal Husbandry Requirements:</i>	<i>Semester Credit Hours</i>
A. H. 1—Fundamentals of Animal Husbandry	3
A. H. 30—Types and Breeds of Livestock.....	3
A. H. 110—Feeds and Feeding	3
A. H. 111—Animal Nutrition	3
A. H. 120—Principles of Breeding	3
A. H. 130—Beef Cattle Production	3

Department of Animal Husbandry Requirements: (continued)	Semester Credit Hours
A. H. 131—Sheep Production	3
A. H. 132—Swine Production	3
A. H. 140—Livestock Management ¹	3
A. H. 150—Livestock Markets and Marketing	2
A. H. 160—Meat and Meat Products.....	3
A. H. 199A-B—Seminar	2
A. E. 108—Farm Management	3
Agron. 1—Crop Production	3
Agron. 10—General Soils	4
Agr. Engr. 101—Agricultural Machinery	2
Agr. Engr. 121—Agricultural Machinery Laboratory	1
Chem. 31, 33—Elements of Organic Chemistry.....	4
Chem. 32, 34—Elements of Organic Chemistry—laboratory	2
Dairy 1—Fundamentals of Dairy.....	3
Econ. 37—Fundamentals of Economics.....	3
Microb. 1—General Microbiology ¹	4
V. S. 101—Comparative Anatomy and Physiology.....	3
V. S. 102—Animal Hygiene	3
Elect one of the following:	
Zool. 104—Genetics (3)	
Bot. 117—Plant Breeding (2)	
Electives	8-9

BOTANY

The Department offers three major fields of work: plant morphology, cytology, cytogenetics and taxonomy; plant pathology; and plant physiology and ecology. The required courses for the freshman and sophomore years are the same for all students. In the junior and senior years, the student elects botany courses to suit his particular interest. Courses are required in other subjects to contribute toward a broad cultural education, and to support the courses selected in the chosen field of botany.

The curriculum as outlined, provides a complete survey of the field of botany for prospective high school teachers, and lays a good foundation for graduate work in botany in preparation for college teaching and for research in state or federal experiment stations, or in private research laboratories.

Students are also afforded an opportunity for training for other vocations involving various botanical applications, such as extension work, and positions with seed companies, canning companies and other commercial concerns.

Students who wish to meet the requirements for certificates in secondary education may elect basic courses in education. An additional semester will usually be necessary to take certain courses in education, including the required practice

¹ Required for students lacking farm experience.

Botany, Dairy Curriculum

teaching. As long as the demand continues, a series of advanced courses will be offered in rotation in the summer session especially for teachers working toward the degree Master of Education in science teaching.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Department of Botany Requirements:</i>	<i>Semester Credit Hours</i>
Bot. 2—General Botany	4
Bot. 11—Plant Taxonomy	3
Bot. 20—Diseases of Plants	3
Bot. 101—Plant Physiology	4
Bot. 102—Plant Ecology	3
Bot. 111—Plant Anatomy	3
Bot. 117—General Plant Genetics	2
Modern Language, preferably German.....	12
Math. 10, 11.....	6
Microb. 1—General Microbiology	4
Zool. 1—General Zoology	4
Phys. 10, 11—Fundamentals of Physics.....	8
Botany electives	10
Electives	12

Students specializing in plant morphology or plant taxonomy will elect Bot. 114 and/or Bot. 128; those specializing in plant pathology will elect Bot. 122, Ent. 1, and two of the following: Bot. 123, Bot. 124, Bot. 125, Bot. 126; those specializing in plant physiology or plant pathology will elect Organic Chemistry, Chem. 31, 32, 33, 34.

DAIRY

The Dairy Department offers instruction in two major lines of work; dairy husbandry and dairy technology. In the dairy husbandry curriculum, students are given technical and practical training in the breeding, feeding, management, and selection of dairy cattle and in milk production. With suitable choice of courses, students are qualified as operators of dairy farms, for breed promotion and sales work, or employment with private and cooperative business organizations, and for county agent work. The dairy technology curriculum is designed to prepare students for practical and scientific work concerned with the processing and distribution of milk, manufacture and handling of butter, cheese, ice cream, and other products, in dairy plant operation and management, and in dairy inspection and quality control. Students satisfactorily majoring in dairy technology are qualified for the many technical and applied positions in the various branches of the dairy industry.

By careful election of courses in either curriculum the student may lay a foundation for advanced study, for instructional work in colleges, and for re-

search in experiment stations or commercial laboratories. The suggested curricula will be modified to meet the special needs of individual students.

DAIRY HUSBANDRY CURRICULUM

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

Dairy Department Requirements:

*Semester
Credit Hours*

Agron. 1—Crop Production	3
Agron. 10—General Soils	4
A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding	3
A. H. 111—Animal Nutrition	3
Bot. 1—General Botany	4
Dairy 1—Fundamentals of Dairying.....	3
Dairy 20—Dairy Production	3
Dairy 102—Physiology of Reproduction	3
Dairy 103—Physiology of Milk Secretion	3
Dairy 105—Dairy Cattle Breeding	3
Dairy 199—Seminar	1
Microb. 1—General Microbiology	4
Microb. 133—Dairy Microbiology	4
V. S. 101—Comparative Anatomy and Physiology.....	3
V. S. 102—Animal Hygiene	3
Zool. 1—General Zoology	4
Zool. 104—Genetics	3
A. E. 115—Marketing Dairy Products.....	3
Elect at least 6 semester credits from the following (electives should form an organized unit):	
Chem. 31—Elements of Organic Chemistry (2)	
Chem. 32—Elements of Organic Chemistry Laboratory (1)	
Chem. 33—Elements of Organic Chemistry (2)	
Chem. 34—Elements of Organic Chemistry Laboratory (1)	
Chem. 35—Elementary Organic Chemistry (2)	
Chem. 36—Elementary Organic Chemistry Laboratory (2)	
Chem. 37—Elementary Organic Chemistry (2)	
Chem. 38—Elementary Organic Chemistry Laboratory (2)	
Electives	20

DAIRY TECHNOLOGY CURRICULUM*

Technical Phase

*Semester
Credit Hours*

Ag. Engr. 111—Mechanics for Agricultural Processing.....	3
Bot. 1—General Botany	4
Chem. 19—Quantitative Analysis	4
Dairy 1—Fundamentals of Dairying	3
Dairy 40—Grading Dairy Products	2
Dairy 108—Dairy Technology	4
Dairy 109—Market Milk	4

*Students may elect to take either the Technical or the Business Phase.

Dairy Curriculum

	Semester Credit Hours
<i>Technical Phase (continued)</i>	
Dairy 110—Concentrated Milk, Cheese and Butter.....	4
Dairy 112—Ice Cream Making	4
Dairy 116—Dairy Plant Management.....	3
Dairy 199—Dairy Seminar	1
Econ. 37—Fundamentals of Economics	3
Microb. 1—General Microbiology	4
Microb. 133—Dairy Microbiology	4
Phys. 1—Elements of Physics.....	3
Zool. 1—General Zoology	4
Elect at least 6 semester credits from the following (electives should form an organized unit):	
Chem. 31—Elements of Organic Chemistry (2)	
Chem. 32—Elements of Organic Chemistry Laboratory (1)	
Chem. 33—Elements of Organic Chemistry (2)	
Chem. 34—Elements of Organic Chemistry Laboratory (1)	
Chem. 35—Elementary Organic Chemistry (2)	
Chem. 36—Elementary Organic Chemistry Laboratory (2)	
Chem. 37—Elementary Organic Chemistry (2)	
Chem. 38—Elementary Organic Chemistry Laboratory (2)	
Elect one of the following:	
Math. 5—Business Algebra (3)	
Math. 10—Algebra (3)	
Electives	25
<i>Business Phase</i>	
A. E. 115—Marketing Dairy Products	3
Agr. Engr. 111—Mechanics for Agricultural Processing.....	3
Bot. 1—General Botany	4
B. A. 10—Introduction to Business.....	3
B. A. 20—Principles of Accounting.....	3
Dairy 1—Fundamentals of Dairying.....	3
Dairy 40—Grading Dairy Products.....	2
Dairy 108—Dairy Technology	4
Dairy 109—Market Milk	4
Dairy 110—Concentrated Milk, Cheese and Butter.....	4
Dairy 112—Ice Cream Making.....	4
Dairy 116—Dairy Plant Management.....	3
Dairy 199—Dairy Seminar	1
Econ. 37—Fundamentals of Economics.....	3
Math. 5—Business Algebra	3
Microb. 1—General Microbiology	4
Microb. 133—Dairy Microbiology	4
Zool. 1—General Zoology	4
Elect an organized unit from the following of at least three credits:	
Chem. 31—Elements of Organic Chemistry (2)	
Chem. 32—Elements of Organic Chemistry Laboratory (1)	
Chem. 35—Elementary Organic Chemistry (2)	
Chem. 36—Elementary Organic Chemistry Laboratory (2)	
Electives	21

ENTOMOLOGY

This curriculum prepares students for work in various types of entomological positions. Professional entomologists are engaged in fundamental and applied research, regulatory and control services with state and federal agencies, commercial pest control, sales and developmental programs with chemical companies and other commercial organizations, consulting work, extension work, and teaching.

A student wishing an undergraduate minor in entomology should take the introductory course (Ent. 1) and after consultation with the heads of both the major and minor departments will select courses that will contribute most to the end he has in view.

Most of the first two years of this curriculum is devoted to obtaining the essential background. In the junior and senior year there is opportunity for some specializing.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

Department of Entomology Requirements:

	<i>Semester Credit Hours</i>
Ent. 1—Introductory Entomology	3
Ent. 20—Insect Pests of Agricultural Crops	4
Ent. 105—Medical Entomology	3
Ent. 120—Insect Taxonomy and Biology	4
Ent. 198—Special Problems	2
Ent. 199—Seminar	2
Bot. 11—Plant Taxonomy	3
Bot. 20—Diseases of Plants	3
Microb. 1—General Microbiology	4
Elect 30 semester credits from the following:	
A. H. 1—Fundamentals of Animal Husbandry	3
Agr. 100—Introductory Agri. Biometrics	3
Agr. Engr. 102—Agricultural Tractors and Power Units	2
Agr. Engr. 122—Agricultural Tractors and Power Laboratory ..	1
Agron. 1—Crop Production	3
Agron. 10—General Soils	4
Bot. 117—General Plant Genetics	3
Chem. 31, 33—Elements of Organic Chemistry	4
Chem. 32, 34—Elements of Organic Chemistry Lab	2
Dairy 1—Fundamentals of Dairying	3
French 1, 2—Elementary French	6
German 1, 2—Elementary German	6
Math. 10—Algebra	3
Math. 11—Trigonometry and Analytic Geometry	3
Phys. 1—Elements of Physics	3
Phys. 2—Elements of Physics	3
Zool. 104—Genetics	3
Electives	19

HORTICULTURE

The Department of Horticulture offers instruction in pomology (fruits), olericulture (vegetables), floriculture (flowers) and ornamental horticulture, and processing of horticultural crops. These courses prepare students to enter commercial production and the horticultural industries such as fruit and vegetable processing and seed production. Students are likewise prepared to enter the allied industries as horticultural workers with fertilizer companies, equipment manufacturers, and others. Students who wish to enter specialized fields of research and teaching may take advanced work in the Department.

POMOLOGY AND OLERICULTURE CURRICULUM

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

	<i>Semester Credit Hours</i>
<i>Department of Horticulture Requirements:</i>	
Hort. 5, 6—Tree Fruit Production.....	3, 2
Hort. 58—Vegetable Production	3
Hort. 59—Berry Production	3
Hort. 101—Technology of Fruits.....	3
Hort. 103—Technology of Vegetables.....	3
Hort. 114—Systematic Horticulture	3
Hort. 161—Physiology of Maturation and Storage of Horticultural Crops	2
Hort. 199—Seminar	1
Bot. 20—Diseases of Plants.....	3
Bot. 101—Plant Physiology	4
Bot. 117—General Plant Genetics	2
Agron. 10—General Soils	4
Ent. 20—Insect Pests of Agricultural Crops.....	4

Elect one of the following courses:

Bot. 125—Diseases of Fruit Crops (2)

Bot. 126—Diseases of Vegetable Crops (2)

Elect 7 semester credits from the following:

Hort. 11—Greenhouse Management (3)

Hort. 22—Landscape Gardening (2)

Hort. 62—Plant Propagation (3)

Hort. 107, 108—Woody Plant Materials (3, 3)

Hort. 198—Special Problems (2, 2)

Electives 28

FLORICULTURE AND ORNAMENTAL HORTICULTURAL CURRICULUM

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Department of Horticulture Requirements:</i>	<i>Semester Credit Hours</i>
Hort. 11—Greenhouse Management	3
Hort. 16—Garden Management	3
Hort. 22—Landscape Gardening	2
Hort. 56—Elements of Landscape Design.....	2
Hort. 62—Plant Propagation	3
Hort. 105—Technology of Ornamentals.....	2
Hort. 107, 108—Woody Plant Materials.....	3, 3
Hort. 150, 151—Commercial Floriculture	3, 3
Hort. 152, 153—Landscape Design	3, 3
Hort. 199—Seminar	1
Bot. 11—Plant Taxonomy	3
Bot. 20—Diseases of Plants.....	3
Bot. 101—Plant Physiology	4
Bot. 117—General Plant Genetics.....	2
Bot. 123—Diseases of Ornamental Crops.....	2
Agron. 10—General Soils.....	4
Ent. 116—Insect Pests of Ornamental and Greenhouse Plants.....	3
Electives	22

PROCESSING OF HORTICULTURAL CROPS CURRICULUM

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

<i>Department of Horticulture Requirements:</i>	<i>Semester Credit Hours</i>
Hort. 58—Vegetable Production	3
Hort. 61—Introduction to Fruit and Vegetable Processing.....	1
Hort. 101—Technology of Fruits	3
Hort. 103—Technology of Vegetables	3
Hort. 123—Quality Control	3
Hort. 124—Quality Control Systems	3
Hort. 155, 156—Fundamentals of Fruit and Vegetable Processing....	3, 3
Hort. 161—Physiology of Maturation and Storage of Horticultural Crops	2
Hort. 199—Seminar	1
Bot. 101—Plant Physiology	4
Chem. 31, 33—Elements of Organic Chemistry	2, 2
Chem. 32, 34—Elements of Organic Laboratory	1, 1
Agron. 10—General Soils	4
Phys. 1, 2—Elements of Physics.....	3, 3
Microb. 13—Food and Sanitary Microbiology.....	4
Agr. Engr. 111—Mechanics for Agricultural Processing.....	3
Agr. Engr. 112—Machinery and Equipment for Food Processing....	2

Department of Horticulture Requirements: (continued)

Semester
Credit Hours

Elect 8 semester credits from the following:

- Hort. 198—Special Problems (2, 2)
- B. A. 150—Market Management (3)
- B. A. 160—Personnel Management (3)
- Chem. 19—Quantitative Analysis (4)

Electives 15

POULTRY HUSBANDRY

The curriculum in poultry husbandry is designed to give the student a thorough knowledge of subject matter necessary for poultry raising; the marketing, distribution, and processing of poultry products; poultry improvement work; and as a basis for graduate training of teaching and research in poultry husbandry.

The suggested curriculum will be modified to meet the special needs of individual students. Superior students, definitely anticipating preparation for a professional career in poultry husbandry, are encouraged to take a language. However, all students majoring in poultry husbandry will be required to complete 24 semester hours in poultry husbandry.

University Requirements (see page 10)

College of Agriculture Requirements (see page 10)

Department of Poultry Husbandry Requirements:

Semester
Credit Hours

P. H. 1—Poultry Production	3
P. H. 3—Physiology of Hatchability.....	3
P. H. 101—Poultry Nutrition	3
P. H. 103—Commercial Poultry Management.....	3
P. H. 104—Technology of Market Eggs and Poultry.....	3
P. H. 105—Poultry Genetics	3
P. H. 109—Avian Physiology	3
Agron. 1—Crop Production	3
A. E. 117—Economics of Marketing Eggs and Poultry.....	3
Agr. 100—Introductory Agricultural Biometrics.....	3
Econ. 37—Fundamentals of Economics.....	3
Eng. 7—Technical Writing	2
Math. 5—General Mathematics	3
Microb. 1—General Microbiology.....	4
Phys. 1—Elements of Physics	3
Speech 1, 2—Public Speaking.....	2, 2
V. S. 107—Poultry Hygiene	3
V. S. 108—Avian Anatomy	3
Zool. 104—Genetics	3
Chem. 31, 33—Elements of Organic Chemistry	2, 2
Chem. 32, 34—Elements of Organic Chemistry Laboratory	1, 1
Agricultural Engineering Elective.....	
Business Elective (B. A. 20, or 150, 180).....	3
Electives	18

SPECIAL CURRICULA

PRE-FORESTRY STUDENTS

The College of Agriculture is glad to cooperate with any student who wishes to attend the University to pursue courses which may be transferred to a standard forestry curriculum in another institution. The program which a student follows depends to some extent upon the forestry college he plans to enter. All pre-forestry students in the College of Agriculture are sent to the Department of Botany of the University for counsel and advice in these matters.

PRE-THEOLOGICAL STUDENTS

The College of Agriculture is glad to cooperate with the officers of any theological seminary who desire to urge its prospective students to pursue courses in agriculture as a preparation for the rural ministry. Such pre-theological students may enroll for a semester or more or for the usual four year training of the College. In either case they should enroll as members of the general curriculum in the College of Agriculture.

The electives of this curriculum may be used for such pre-theological requirements as seem desirable. Elections may be made from any of the offerings of the University such as history, political science, philosophy, agricultural economics, rural sociology, modern language, English, economics, psychology, sociology, natural science, education and the like. Students desiring to pursue a pre-theological program in the College of Agriculture of the University of Maryland, should consult with the president or admissions officer of the theological seminary which they expect to attend.

PRE-VETERINARY STUDENTS

This program is designed for students desiring to prepare for the professional course in veterinary medicine.

A combined degree is available to students in pre-veterinary science. A student who has completed 90 academic semester credits at the University of Maryland and who has completed 30 additional academic semester credits at the University of Georgia or at any accredited veterinary school is eligible to make application for the Bachelor of Science degree from the University of Maryland.

Students wishing to apply for the combined degree must fulfill University and College requirements as set forth on Page 10.

The State of Maryland has entered a regional agreement with the State of Georgia which makes ten spaces a year available in the School of Veterinary Medicine, University of Georgia. The spaces are to be filled on a competitive basis from among qualified applicants.

Candidates, to be considered qualified, must have:

- a. Completed the curriculum shown below with grades not less than "C" in any subject;
- b. Taken the veterinary medical aptitude test; and
- c. Must be a bona fide resident of Maryland.

Special Curricula

All requirements must be completed by June prior to the September in which the student desires to matriculate in veterinary college. The pre-veterinary curriculum can be completed in two years but may be extended, thus making it possible for the applicant to select desirable electives.

After the names of the candidates have been received, a Georgia Board of Admissions will assemble at the University of Maryland and will interview each candidate and receive the transcript and all pertinent documents relating to him. The selection will be made by the Office of Admissions, University of Georgia.

The pre-veterinary curriculum should contain:

	Semester Credit Hours
American Government	3
Biological Sciences	12
Botany (4)	
Zoology (8)	
English	9
Physical Sciences	26
Inorganic Chemistry (8)	
Organic Chemistry (6)	
Mathematics (6)	
Physics (6)	
Animal Science	9
Fundamentals of Animal Husbandry (3)	
Fundamentals of Dairying (3)	
Poultry Production (3)	
Air Science	5*
Physical Education	4

SPECIAL STUDENTS IN AGRICULTURE

Mature students may, with the consent of the Dean, register as special students and pursue a program of studies not included in any regular curriculum, but arranged to meet the needs of the individual. All University fees for these special students are the same as fees for regular students.

There are many young farmers who desire to take short intensive courses in their special lines of work during slack times on the farm. Arrangements have been made to permit such persons to register at the office of the Dean of the College of Agriculture and receive cards granting them permission to visit classes and work in the laboratories of the different departments. This opportunity is created to aid florists, poultrymen and fruit-growers, gardeners, or other especially interested persons who are able to get away from their work at some time during the year.

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

The regular charges are \$10.00 for matriculation and \$2.00 per credit hour per month for the time of attendance. One matriculation is good for any amount of regular or intermittent attendance during a period of four years.

TWO-YEAR PROGRAM IN AGRICULTURE

The objective of the two-year program is to offer a course of study to students desiring to study agriculture in college but who may be able to spend not over two years in college. This program offers training to prepare students to return to the farm or for employment in related agricultural business and industry.

Students in the two-year program will be admitted to the College of Agriculture under established University entrance requirements. Students in this program will be required to take Basic Air Science (5 hours*), physical activities (4 hours) and basic sciences pertinent to agriculture. Other courses may be elected according to the specific interest of the student. Each student will be assigned to an adviser to assist him in developing a program of study.

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

AGRICULTURE

Agr. 1. Introduction to Agriculture. (1)

First semester. Required of all beginning freshmen and sophomores in agriculture. Other students must get the consent of the instructor. A series of lectures introducing the student to the broad field of agriculture. (Poffenberger.)

Agr. 100. Introductory Agricultural Biometrics. (3)

First semester. Two lectures and one laboratory period per week. Introduction to fundamental concepts underlying the application of biometrical methods to agricultural problems with emphasis on graphical presentation of data, descriptive statistics, chi-square and t-tests, and linear regression and correlation.

Agr. 200. Agricultural Biometrics. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, Agr. Biom. 100 or equivalent. A continuation of Agr. 100 with emphasis on analysis of variance and co-variance, multiple and curvilinear regression, sampling, experimental design and miscellaneous statistical techniques as applied to agricultural problems.

Agr. 202, 203. Advanced Biological Statistics. (2, 2)

First and second semesters. Prerequisite, approval of instructor. An advanced course dealing with specialized experimental designs, sampling techniques and elaborations of standard statistical procedures as applied to the animal and plant sciences.

AGRICULTURAL ECONOMICS

Professors: POFFENBERGER, BEAL AND WALKER.

Visiting Professor: TAYLOR.

Associate Professors: HAMILTON AND SMITH.

Assistant Professors: ISHEE, SWOPE AND WYSONG.

Instructor: NUCKOLS.

A. E. 50. *Economics of Agriculture.* (3)

Second semester. Prerequisite, Econ. 37. A general course in agricultural economics, with special reference to population trends, the factors in agricultural production, agricultural wealth, land tenure, farm labor, agricultural credit, the tariff, price movements, and marketing. (Swope.)

For Advanced Undergraduates and Graduates

A. E. 101. *Marketing of Agricultural Products.* (3)

First semester. Prerequisite, Econ. 31, 32, or Econ. 37. The development of marketing, its scope, channels, and agencies of distribution, functions, costs, methods used and services rendered. (Swope.)

A. E. 103. *Cooperation in Agriculture.* (3)

First semester. (Offered 1961-62.) Historical and comparative development of farmers' cooperative organizations; reasons for failure and essentials to success; commodity developments; operative practices; banks for cooperatives; present trends. (Nuckols.)

A. E. 104. *Agricultural Finance.* (3)

Second semester. (Offered 1962-63.) A study of credit principles as applied to private and cooperative farm business and the agencies extending farm credit. The needs for the benefits of farm insurance, including fire, crop, livestock, and life insurance. (Ishee.)

A. E. 106. *Prices of Agricultural Products.* (3)

Second semester. A general course in prices, price relationships, and price analysis, with emphasis on prices of agricultural products. (Wysong.)

A. E. 107. *Analysis of the Farm Business.* (3)

First semester. A concise, practical course in the keeping, summarizing, and analyzing of farm accounts. (Hamilton.)

A. E. 108. *Farm Management.* (3)

Second semester. A study of the organization and operation of farms from the standpoint of efficiency, selection of farms, size of farms, leasing systems, and factors affecting profits. Students will make an analysis of the actual farm business and practices of different types of farms, and make specific recommendations as to how these farms may be organized and operate as successful businesses. (Hamilton.)

A. E. 111. *Land Economics.* (3)

First semester. (Offered 1961-62.) A study of the principles, problems and policies in the utilization of land with special emphasis on agricultural land. (Ishee.)

A. E. 112. Economic Development of American Agriculture. (3)

First semester. (Offered 1962-63.) This course is designed to acquaint students with major economic development in American agriculture. It places particular emphasis upon the economic impact of major agricultural movements, such as, colonial agrarianism, the disposition of the public domain, farm organizations, recent governmental farm programs and the relationship of agriculture to public affairs. (Smith.)

A. E. 114. Foreign Trade in Farm Products. (3)

First semester. (Offered 1961-62.) Economic principles in historical setting, trade barriers, foreign exchange problems, measures to promote trade, past and prospective trends of American imports and exports of farm products. (Taylor.)

A. E. 115. Marketing of Dairy Products. (2)

First semester. (Offered 1962-63.) A study of principles and practices in the marketing of milk and manufactured dairy products, including the influence of significant geographical and institutional relationships on costs and methods of distribution. (Beal.)

A. E. 116. Marketing of Fruits and Vegetables. (2)

Second semester. (Offered 1962-63.) A study of principles and practices in the marketing of fresh and processed fruits and vegetables, including the influence of significant geographical and institutional relationships on costs and methods of distribution. (Swope.)

A. E. 117. Economics of Marketing Eggs and Poultry. (3)

Second semester. (Offered 1961-62.) This course embraces the economic phases of egg and poultry marketing. Supply and demand factors, including trends, will be discussed along with marketing methods, marketing costs and margins, market facilities, transportation, government grading, storage and efficiency in marketing. Consumer preference, acceptance and purchases will be related to consumer income, pricing of competitive products and display methods. (Smith.)

A. E. 118. Foreign Agricultural Policies. (3)

Second semester. This course deals with how the agricultural policies of the United States and foreign countries of major agricultural importance are formulated and conducted. Specific policies are evaluated. The effect of various incentives and barriers to American exports and imports of agricultural products is appraised with the assistance of visiting discussion leaders working at the policy level in the United States and other major agricultural countries. (Taylor.)

A. E. 119. Foreign Agricultural Economics. (3)

First semester. This course deals with differences between the agricultural economies of several countries and their significance to world-wide production, trade, and consumption of the agricultural products of major importance to the United States. Special emphasis is given to the roles of institutional and governmental arrangements. (Taylor.)

A. E. 198. Research Problems. (1-2) (2 cr. max.)

First and second semesters. With the permission of the instructor, students will work on any research problems in agricultural economics. There will be occasional class meetings for the purpose of making reports on progress of work. (Staff.)

A. E. 199A-B. Seminar. (1, 1)

First and second semesters. Students will prepare and present reports on economic literature and current agricultural economic problems. (Hamilton.)

Technology of Market Eggs and Poultry.

See Poultry Husbandry, P. H. 104.

Poultry Industrial and Economic Problems.

See Poultry Husbandry, P. H. 107.

Market Milk.

See Dairy 109.

Livestock Markets and Marketing.

See Animal Husbandry, A. H. 150.

Meat and Meat Products.

See Animal Husbandry, A. H. 160.

Advertising.

See Business Administration, B. A. 151.

Retail Store Management.

See Business Administration, B. A. 154.

For Graduates

A. E. S207. Farm Business Analysis. (1)

Summer session only. An advanced course dealing with farm records and accounts. Designed especially for teachers of agriculture and county agents. (Hamilton.)

A. E. 208. Agricultural Policy. (3)

Second semester. The evolution of agricultural policy in the United States, emphasizing the origin and development of governmental programs, and their effects upon agricultural production, prices and income. (Beal.)

A. E. 210. Agricultural Taxation. (3)

First semester. (Offered 1962-63.) Principles, theory and practical problems of taxation applied to the field of agriculture; trends in farm taxes; farm tax burdens; equalizing and reducing farm tax burdens; taxation of farm cooperatives; forest lands and interstate agricultural commerce; application of income taxes and sales taxes to farmers; taxation of agriculture in foreign countries. (Walker.)

A. E. 211. Functional Aspects of Farm Taxation. (3)

Second semester. (Offered 1961-62.) Two lectures and one laboratory period a week. Taxation policies and inter-governmental allocations and grants-in-aid as they affect public services for rural people, with special emphasis on public education, public highways, public welfare, social security, public debt; and governmental research, extension, and regulatory activities directly concerning agriculture. (Walker.)

Agricultural Economics

A. E. 214. Advanced Agricultural Marketing. (3)

Second semester. Advanced study of the complex theoretical, institutional and legal factor governing both domestic and foreign agricultural trade, with particular attention given to policies and practices affecting cost and price. (Beal.)

A. E. 216. Advanced Farm Management. (3)

Second semester. An advanced course in farm organization and management which applies the economic principles of farm production to the operation of farms of different sizes, types, operations, and geographical locations. Consideration is also given to adjustments which have taken place in farming specific areas and probable changes in the future. (Ishee.)

A. E. S216 A-B. Advanced Farm Management. (1, 1)

Summer session only. An advanced course in farm organization and management, especially designed for teachers of vocational agriculture. (Hamilton.)

A. E. 218. Agricultural Economics Research Techniques. (3)

First semester. A study and an appraisal of agricultural economics research techniques. Experience is given in outlining and conducting research projects. A critical appraisal is made of methods of analysis and the presentation of results. (Beal.)

A. E. 219. Advanced Land Economics. (3)

Second semester. A critical analysis of the principles and problems in issuing and controlling land resources, including a review of land policies, is given, with special consideration being placed on the problems of submarginal lands, range lands, and water resources. Conservation of various land resources is appraised, problems of landed property are presented; and criteria essential to the development of a sound land policy are studied. (Ishee.)

A. E. 220. World Agricultural Production. (3)

First semester. A world-wide appraisal of the economic significance of the growth of population, changes in food and fiber requirements, development of land resources, development of crop and livestock productivity, substitute or supplementary products from factory and sea the economic imbalance between developed and under-developed countries, financial and social limitations, and organized international agricultural development activities. (Taylor.)

A. E. 301. Special Problems in Agricultural Economics. (1-4) (4 cr. max.)

First and second semesters. An advanced course dealing extensively with some of the economic problems affecting the farmer, such as land values, taxation, credit, prices, production adjustments, transportation, marketing, and cooperation. (Staff.)

A. E. 302. Seminar. (1)

First and second semesters. M. S. candidates can obtain 2 credits; Ph.D. candidates can obtain 6 credits. Students will be assigned research in agricultural economics under the supervision of the instructor. The work will consist of original investigation in problems of agricultural economics. (Staff.)

A. E. 399. Research.

Credit according to work accomplished. This course will consist of special reports by students on current economic subjects, and a discussion and criticism of the same by the members of the class and instructional staff. (Staff.)

AGRICULTURAL AND EXTENSION EDUCATION

Professors: CARDOZIER, WARNER.

Assistant Professor: SMITH.

For Advanced Undergraduates

R. Ed. 101. Teaching Farm Practicums and Demonstrations. (2)

First semester. Two laboratory periods a week. This course is designed to assist the student in relating the learning acquired with the problems of doing and demonstrating which he faces in the field and in the classroom as a teacher of agriculture. (Smith.)

R. Ed. 103. Practice Teaching. (5)

First semester. Open only to students majoring in agricultural education who have a satisfactory scholastic average. Five weeks, full time. Under the direction of a supervising teacher and the supervision of a teacher-trainer the student is required to analyze and prepare special units of subject matter in agriculture, plan and teach lessons, supervise farming programs of students and otherwise perform the duties of a high school teacher of vocational agriculture. Not less than 125 clock hours, exclusive of observation, shall be required.

R. Ed. 104. Practice Teaching. (1-4)

First and second semesters. Registration concurrent or after R. Ed. 103. One to four weeks full time. To provide students an opportunity to gain experience in farming program supervision, the opening of school, and in other teaching activities not generally a part of R. Ed. 103.

R. Ed. S108 A-B. Problems in Teaching Farm Mechanics. (1-1)

Summer session only. The latest developments in the teaching of farm mechanics. Various methods in use will be compared and studied under laboratory conditions.

R. Ed. 161. 4-H Organization and Procedure. (2)

A study of the youth phase of cooperative and extension work. Emphasis is placed on the philosophy, objectives, organization, leadership development and methods used in conducting 4-H Club work at the local and county level.

R. Ed. 198. Special Problems in Agricultural Education. (1-3)

First and second semesters. Summer session. Prerequisite, approval of staff. Credit in accordance with amount of work planned. A course designed for advanced undergraduates for problems in teaching vocational agriculture. (Staff.)

R. Ed. S199 A-B. Seminar in Agricultural Education. (1-1)

Summer session only. Investigations, reports and papers on the organization and administration of agricultural education. (Smith.)

For Advanced Undergraduates and Graduates

R. Ed. 107. Observation and Analysis of Teaching Agriculture. (3)

Second semester. Two lectures and one laboratory period a week. This course deals with an analysis of pupil learning in class groups. (Smith.)

Agricultural and Extension Education

R. Ed. 109. Teaching Secondary Vocational Agriculture. (3)

First semester. A comprehensive course in the work of high school departments of vocational agriculture. It emphasizes particularly placement, supervised farming programs, the organization and administration of Future Farmer activities, and objectives and methods in all-day instruction. (Cardozier)

R. Ed. 111. Teaching Young and Adult Farmer Groups. (1)

First semester. Characteristics of young and adult farmer instruction in agriculture. Determining needs for and organizing a course; selecting materials for instruction; and class management. Emphasis is on the conference method of teaching. (Smith.)

R. Ed. 112. Departmental Management. (1)

Second semester. One laboratory period a week. Prerequisites, R. Ed. 107 and 109, or permission of the Head of the Department. The analysis of administrative programs for high school departments of vocational agriculture. Investigations and reports. (Smith.)

R. Ed. 114. Rural Life and Education. (3)

Second semester. An intensive study of the educational agencies at work in rural communities, stressing an analysis of school patronage areas, the possibilities of normal life in rural areas, early beginnings in rural education, and the conditioning effects of educational offerings.

R. Ed. 150. Extension Education. (2)

Second semester. The Agricultural Extension Service as an educational agency. The history, philosophy, objectives, policy, organization, legislation and methods used in extension work. (Warner.)

R. Ed. 160. Agricultural Communications. (2)

First semester. A general introduction to communications and the application of communication principles and problems of teaching agricultural workers, person to person, with groups and through mass media. (Warner.)

R. Ed. 170 A-B. Workshop Teaching Conservation of Natural Resources. (3-3)

Fee, \$25.00. This workshop is devoted to a study of the state's basic wealth, its natural resources, natural resource problems and practices pertinent to local, state, national and world welfare.

For Graduates

R. Ed. 201. Rural Life and Education. (3)

First semester. (Given in accordance with demand, but not more often than alternate years.) Prerequisite, R. Ed. 114 or equivalent. A sociological approach to rural education as a movement for a good life in rural communities. (Smith.)

R. Ed. 203. Farm Organizations and Rural Education. (3)

Second semester. (Given in accordance with demand, but not more often than alternate years.) Prerequisite, R. Ed. 114 or equivalent. The part played by farm organizations in formal and informal education in the rural community.

R. Ed. 207, 208. Problems in Vocational Agriculture. (2, 2)

First and second semesters. (Given in accordance with demand, but not more often than alternate years.) In this course special emphasis is placed upon the current problems facing teachers of vocational agriculture. It is designed especially for persons who have had several years of teaching experience in this field.

(Smith, Cardozier.)

R. Ed. S207 A-B. Problems in Teaching Vocational Agriculture. (1-1)

Summer session only. A critical analysis of current problems in the teaching of vocational agriculture with special emphasis upon recent developments in all-day programs.

(Smith.)

R. Ed. S209 A-B. Adult Education in Agriculture. (1-1)

Summer session only. Principles of adult education as applied to rural groups, especially young and adult farmers. Organizing classes, planning courses and instructional methods are stressed.

(Staff.)

R. Ed. S210 A-B. The Land Grant College System. (1-1)

Summer session only. Development of Land Grant colleges and the role they have played in improving rural conditions.

(Staff.)

R. Ed. S213 A-B. Supervision and Administration of Vocational Agriculture. (1-1)

Summer session only. Administrative and supervisory problems in vocational agriculture including scheduling, local administrative programs, supervisor-teacher relationships and the responsibilities of superintendents and principals in the program.

R. Ed. 215. Supervision of Student Teaching. (1)

Arranged. (Given in accordance with demand, but not more often than alternate years.) The role of the supervising teacher in checking progress, supervising and grading student teachers. Particular emphasis will be given to the region-wide program in training teachers of vocational agriculture, including the evaluation of beginning teachers.

(Cardozier.)

R. Ed. 240. Agricultural College Instruction. (1)

Second semester. (Given in accordance with demand, but not more than alternate years.) Open to graduate students and members of the faculty in the College of Agriculture. A seminar type of course consisting of reports, discussions, and lectures dealing with the techniques and procedures adapted to teaching agricultural subjects at the college level.

(Staff.)

R. Ed. S250 A-B. Critique in Rural Education. (1-1)

Summer session only. Current problems of teaching agriculture are analyzed and discussed. Students are required to make investigations, prepare papers and make reports.

(Smith.)

R. Ed. 301. Field Problems in Rural Education. (1-3)

First and second semesters. Summer session. Prerequisite, six semester hours of graduate study. Problems accepted depend upon the character of the work of the student and the facilities available for study. Periodic conferences required. Final report must follow accepted pattern for field investigations.

(Staff.)

Agricultural Engineering

R. Ed. 302. Seminar in Rural Education. (1, 1)

First and second semesters. Problems in the organization, administration, and supervision of the several agencies of rural education. Investigations, papers, and reports.
(Staff.)

R. Ed. 399. Research. (1-6)

First and second semesters. Summer session. Credit hours according to work done.
(Staff.)

AGRICULTURAL ENGINEERING

Professor: GREEN.

Associate Professor: GIENGER.

Assistant Professor: MATTHEWS.

Agr. Engr. 2. Seminar. (no credit)

First semester. One hour per week. Required of all students upon registration in agricultural engineering curriculum. A series of discussions on applications of engineering sciences in agriculture.
(Staff.)

Agr. Engr. 56. Introduction to Farm Mechanics. (2)

Second semester. One lecture and one laboratory period a week. Laboratory fee, \$3.00. A study of the hand tools and power equipment and their safe use as it applies to mechanized farms. Principles and practice in arc and gas welding, cold metal and sheet metal work are provided. Also, tool fitting, woodworking, plumbing, blue print reading and use of concrete.
(Gienger.)

For Advanced Undergraduates

Agr. Engr. 199. Seminar. (1)

Second semester. Prerequisite, permission of Department. Advanced undergraduates will review literature, present reports and discuss topics in agricultural engineering.
(Staff.)

For Advanced Undergraduates and Graduates

Agr. Engr. 101. Agricultural Machinery. (2)

First semester. Two lectures per week. Concurrent registration in Agr. Engr. 121 or 131 required. Materials and construction of agricultural machinery with particular reference to functions of unit assemblies and complete machines, and factors affecting their adaptation and management.
(Matthews.)

Agr. Engr. 102. Agricultural Tractors and Power Units. (2)

Second semester. Two lectures per week. Concurrent registration in Agr. Engr. 122 or 132 required. Principles of internal combustion engines and fundamentals of power transmission and control mechanisms in self-propelled or stationary units.
(Matthews.)

Agr. Engr. 104. Farm Mechanics. (2)

First semester. Two laboratory periods a week. Laboratory fee, \$3.00. Available only to seniors in agricultural education. This course consists of laboratory exercises in practical farm shop and farm equipment maintenance, repair, and construction projects; and a study of the principles of shop organization and administration.

(Gienger.)

Agr. Engr. 105. Farm Structures. (2)

First semester. Two lectures per week. Concurrent registration in Agr. Engr. 135 required for students in agricultural engineering curriculum. Functional and environmental requirements of farm structures are stressed. Characteristics of materials and structural details of conventional types of construction are included.

(Matthews.)

Agr. Engr. 107. Soil and Water Conservation Engineering. (1)

Second semester. One lecture per week. Concurrent registration in Agr. Engr. 127 or 137 required. Applications of engineering sciences in erosion control, drainage, irrigation, and watershed management.

(Green.)

Agr. Engr. 109. Farm Applications of Electricity. (1)

Second semester. One lecture per week. Concurrent registration in Agr. Engr. 129 or 139 required. Applications of electricity for lighting, heating, cooling or power and characteristics of motors and equipment considered in design to meet requirements.

(Matthews.)

Agr. Engr. 111. Mechanics for Agricultural Processing. (3)

First semester. (Offered 1961-62.) Two lectures and one laboratory period a week. A study of the fundamentals of physics and mechanics and how they are applied in agriculture. Included are the basic laws and applications of mechanics, power transmission, heat and heat transfer, fluid flow, refrigeration, instruments, and lighting.

(Matthews.)

Agr. Engr. 112. Machinery and Equipment for Food Processing. (2)

Second semester. (Offered 1961-62.) One lecture and one laboratory period a week. Prerequisite, Agr. Engr. 111. A study of the mechanical and engineering operations pertaining to food processing plants. Emphasis is placed on machinery and equipment for processing methods, plant sanitation, plant maintenance, and materials handling. Plant layout and design is also included.

(Matthews.)

Agr. Engr. 121. Agricultural Machinery Laboratory. (1)

First semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 101 required. Studies of operating characteristics, adjustments and where applicable, calibration of current models of machinery.

(Matthews.)

Agr. Engr. 122. Agricultural Tractors and Power Laboratory. (1)

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 102 required. Studies of power unit components as related to overall engine and tractor performance.

(Matthews, Gienger.)

Agr. Engr. 127. Soil and Water Conservation Laboratory. (1)

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 107 required. Simple surveying and use of level for erosion control, irrigation and drainage.

(Green.)

Agricultural Engineering

Agr. Engr. 129. Farm Electrification Laboratory. (1)

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 109 required. Layout and design of farmstead wiring plans together with essentials of wiring practices. (Staff.)

Agr. Engr. 131. Agricultural Machinery Design Laboratory. (1)

First semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 101 required. Prerequisite, C. E. 24 or M. E. 24. A study of design factors and force analysis including design of simple units. (Staff.)

Agr. Engr. 132. Farm Power Analysis Laboratory. (1)

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 102 required. Prerequisite, M. E. 100. Determination of efficiency of internal combustion engines, forces and moments of tractor loading, and stability. Engineering aspects of hydraulic control systems and power transmissions are included. (Staff.)

Agr. Engr. 135. Farm Structures Design Laboratory. (1)

First semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 105 required. Prerequisite, C. E. 160. Design of structures with emphasis on functional and environmental requirements for agriculture. (Staff.)

Agr. Engr. 137. Soil and Water Conservation Engineering Laboratory. (1)

Second semester. One three-hour laboratory per week. Prerequisites, C. E. 110 and C. E. 140 or M. E. 102. Hydraulic design of water conveyance systems for erosion control, drainage and irrigation. (Green.)

Agr. Engr. 139. Farm Electrification Engineering Laboratory. (1)

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 109. Prerequisite, E. E. 52. Study of farmstead electrical loads and the design of distribution networks therefor. (Staff.)

Agr. Engr. 198. Special Problems in Farm Mechanics. (1-3)

First and second semesters. Prerequisite, approval of Department. Not acceptable for majors in agricultural engineering. Problems assigned in proportion to credit registered for. (Gienger.)

For Graduates

Agr. Engr. 201. Special Topics in Agricultural Engineering. (3)

First and second semesters. Two lectures and one laboratory period per week. Timely topics in specialized areas of agricultural engineering will be selected as needed by graduate students; for example, Instrumentation for Agricultural Engineering Research. (Staff.)

Agr. Engr. 301. Special Problems in Agricultural Engineering. (1-6)

First and second semesters. Summer session. Work assigned in proportion to amount of credit. (Staff.)

Agr. Engr. 302. Seminar. (1, 1)

First and second semesters. Prerequisite, permission of instructor. (Staff.)

Agr. Engr. 399. Research. (1-6)

Credit according to work accomplished. (Staff.)

AGRONOMY—CROPS AND SOILS

Professor: STREET.

Associate Professors: AXLEY, BOURBEAU, DECKER, LEFFEL AND STRICKLING.

Assistant Professors: CLARK, KRESGE, MEADE, MILLER, NEWCOMER AND SANTELMANN.

CROPS

Agron. 1. Crop Production. (3)

Second semester. Two lectures and one laboratory period a week. Culture, use, improvement, adaptation, distribution, and history of field crops. (Santelmann.)

For Advanced Undergraduates and Graduates

Agron. 103. Crop Breeding. (2)

Second semester, alternate years. (Offered 1962-63.) Prerequisite, Bot. 117 or Zool. 104. Principles and methods of breeding annual self and cross-pollinated plants and perennial forage species. (Leffel.)

Agron. 104. Tobacco Production. (3)

Second semester. Three lectures a week. Prerequisite, Bot. 1. A study of the history, adaptation, distribution, culture, and improvement of various types of tobacco, with special emphasis on problems in Maryland tobacco production. Physical and chemical factors associated with yield and quality of tobacco will be stressed. (Street.)

Agron. 107. Cereal Crop Production. (3)

First semester, alternate years. (Offered 1962-63.) Two lectures and one laboratory period a week. Prerequisite, Bot. 1. Study of the principles and practices of corn, wheat, oats, barley, rye, and soybean production. (Clark.)

Agron. 108. Forage Crop Production. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. Study of the production and management of grasses and legumes for quality hay, silage and pasture. (Decker.)

Agron. 109. Turf Management. (2)

First semester, alternate years. (Offered 1961-62.) Two lectures a week. Prerequisite, Bot. 1. A study of principles and practices in management of turf for lawns, athletic fields, playgrounds, airfields, and highway planting.

Agron. 151. Cropping Systems. (2)

Second semester. Two lectures a week. Prerequisite, Agron. 1 or equivalent. The coordination of information from various courses in the development of balanced cropping systems, appropriate to different objectives in various areas of the state and nation. (Clark.)

Agronomy—Crops and Soils

Agron. 152. Seed Production and Distribution. (2)

First semester, alternate years. (Offered 1962-63.) One lecture and one laboratory period a week. Prerequisite, Agron. 1 or equivalent. A study of seed production, processing, and distribution; federal and state seed control programs; seed laboratory analyses; release of new varieties and maintenance of foundation seed stocks.

(Newcomer.)

Agron. 154. Weed Control. (3)

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisite, Agron. 1 or equivalent. A study of the use of cultural practices and chemical herbicides in the control of weeds.

(Santelmann.)

Additional courses under CROPS AND SOILS.

For Graduates

Agron. 201. Advanced Crop Breeding. (2)

First semester, alternate years. (Offered 1961-62.) Prerequisite, Agron. 103 or equivalent. Genetic, cytogenetic, and statistical theories underlying methods of plant breeding. A study of quantitative inheritance, heterosis, heritability, interspecific and intergeneric hybridization, polyploidy, sterility mechanisms, inbreeding and outbreeding, and other topics as related to plant breeding.

(Leffel.)

Agron. 204. Technic in Field Crop Research. (2)

Second semester, alternate years. (Offered 1962-63.) Field plot technic, application of statistical analysis to agronomic data, and preparation of the research project.

(LeClerc.)

Agron. 205. Advanced Tobacco Production. (2)

First semester, alternate years. (Offered 1961-62.) Two lectures a week. Prerequisite, permission of instructor. A study of the structural adaptation and chemical response of tobacco to environmental variations. Emphasis will be placed on the alkaloids and other unique components.

(Street.)

Agron. 207. Advanced Forage Crops. (2)

First semester, alternate years. (Offered 1962-63.) Two lectures a week. Prerequisites, Bot. 101, Chem. 31 and 32, or equivalent, or permission of instructor. A fundamental study of physiological and ecological responses of grasses and legumes to environmental factors, including fertilizer elements, soil moisture, soil temperature, air temperature, humidity, length of day, quality and intensity of light, wind movement, and defoliation practices. Relationship of these factors to life history, production, chemical and botanical composition, quality, and persistence of forages will be considered.

(Decker.)

Agron. 208. Research Methods. (2)

Second semester. Prerequisite, permission of staff. Development of research viewpoint by detailed study and report on crop research of the Maryland Experiment Station or review of literature on specific phases of a problem.

(Staff.)

Agron. S210. Cropping Systems. (1)

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It deals with outstanding problems and the latest developments in the field.

Additional courses under CROPS AND SOILS.

SOILS

Agron. 10. General Soils. (4)

Second semester. Three lectures and one laboratory period each week. Prerequisite, Chem. 1 or permission of instructor. A study of the fundamentals of soils including their origin, development, relation to natural sciences, effect on civilization, physical properties, and chemical properties. (Kresge.)

For Advanced Undergraduates and Graduates

Agron. S110. Soil Management. (1)

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents dealing with factors involved in management of soils in general and of Maryland soils in particular. Emphasis is placed on methods of maintaining and improving chemical, physical, and biological characteristics of soils. (Strickling.)

Agron. 111. Soil Fertility Principles. (3)

First semester, alternate years. (Offered 1962-63.) Three lectures a week. Prerequisite, Agron. 10. A study of the chemical, physical, and biological characteristics of soils that are important in growing crops. Soil deficiencies of physical, chemical, or biological nature and their correction by the use of lime, fertilizers, and rotations are discussed and illustrated. (Strickling.)

Agron. 112. Commercial Fertilizers. (3)

Second semester. Three lectures a week. Prerequisite, Agron. 10 or permission of instructor. A study of the manufacturing of commercial fertilizers and their use in soils for efficient crop production. (Axley.)

Agron. 113. Soil Conservation. (3)

First semester, alternate years. (Offered 1962-63.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 or permission of instructor. A study of the importance and causes of soil erosion, and methods of soil erosion control. Special emphasis is placed on farm planning for soil conservation. The laboratory period will be largely devoted to field trips.

Agron. 114. Soil Classification and Geography. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisite, Agron. 10, or permission of instructor. A study of the genesis, morphology, classification and geographic distribution of soils. The broad principles governing soil formation are explained. Attention is given to the influence of geographic factors on the development and use of the soils in the United States and other parts of the world. The laboratory periods will be largely devoted to field trips and to a study of soil maps of various countries. (Bourbeau.)

Agron. 116. Soil Chemistry. (3)

First semester, alternate years. (Offered 1962-63.) One lecture and two laboratory periods a week. Prerequisite, Agron. 10, or permission of instructor. A study of the chemical composition of soils; cation and anion exchange; acid, alkaline and saline soil conditions; and soil fixation of plant nutrients. Chemical methods of soil analysis will be studied with emphasis on their relation to fertilizer requirements. (Axley.)

Agronomy—Crops and Soils

Agron. 117. Soil Physics. (3)

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 and a course in physics, or permission of instructor. A study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

Agron. 119. Soil Mineralogy. (4)

First semester, alternate years. (Offered 1961-62.) Two lectures and two laboratory periods a week. Prerequisite, permission of instructor. A study of the fundamental laws and forms of crystal symmetry and essentials of crystal structure; structure, occurrence, association and uses of minerals, determination of minerals by means of their morphological, chemical and physical properties. Particular attention is given to soil-forming minerals. Laboratory periods will be devoted to a systematic study of about 75 minerals. (Bourbeau.)

Additional courses under CROPS AND SOILS.

For Graduates

Agron. 250. Advanced Soil Mineralogy. (3)

First semester, alternate years. (Offered 1962-63.) Three lectures a week. Prerequisites, Agron. 10, Agron. 119 and permission of instructor. A study of the structure physical-chemical characteristics and identification methods of soil minerals, particularly clay minerals, and their relationship to soil genesis and productivity. (Bourbeau.)

Agron. 251. Advanced Methods of Soil Investigation. (3)

First semester, alternate years. (Offered 1961-62.) Three lectures a week. Prerequisites, Agron. 10 and permission of instructor. An advanced study of the theory of the chemical methods of soil investigation with emphasis on problems involving application of physical chemistry. (Axley.)

Agron. 252. Advanced Soil Physics. (3)

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisites, Agron. 10 and permission of instructor. An advanced study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

Agron. 253. Advanced Soil Chemistry. (3)

First semester, alternate years. (Offered 1962-63.) One lecture and two laboratory periods a week. Prerequisite, permission of instructor. A continuation of Agron. 116 with emphasis on soil chemistry of minor elements necessary for plant growth. (Axley.)

Additional courses under CROPS AND SOILS.

CROPS AND SOILS

For Advanced Undergraduates

Agron. 198. Special Problems in Agronomy. (1)

Second semester. Prerequisites, Agron. 10, 107, 108 or permission of instructor. A detailed study, including a written report of an important problem in agronomy. (Staff.)

Agron. 199. Senior Seminar. (1)

Second semester. Prerequisites, Agron. 107, and 108. Reports by seniors on current scientific and practical publications pertaining to agronomy. (Santelmann.)

For Graduates

Agron. 260. Recent Advances in Agronomy. (2-4)

First semester. Two hours each year. Total credit four hours. Prerequisite, permission of instructor. A study of recent advances in agronomy research. (Staff.)

Agron. 302. Agronomy Seminar. (1, 1)

First and second semesters. Total credit toward M. S., 2; toward Ph.D., 6. Prerequisite, permission of instructor. (Staff.)

Agron. 399. Research.

First and second semesters. Credit according to work done. (Staff.)

ANIMAL HUSBANDRY

Professors: FOSTER AND GREEN.

Associate Professor: LEFFEL.

Assistant Professors: BURIC AND YOUNG.

A. H. 1. Fundamentals of Animal Husbandry. (3)

First semester. Two lectures and one laboratory period a week. A study of the general problems in breeding, feeding, management and marketing of beef cattle, sheep, swine and horses. Practice is given in the selection of animals to meet market demands. Field trips may be made to near-by farms and packing plants. (Staff.)

A. H. 30. Types and Breeds of Livestock. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, A. H. 1. A study of the various types and breeds of livestock, their development, characteristics and adaptability. Practice is given in selection according to standards of excellence. (Staff.)

A. H. 90. Livestock Judging. (2)

Second semester. Two laboratory periods a week. Prerequisite, A. H. 30 or permission of instructor. Training is given in the judging of beef cattle, sheep, swine and horses. Occasional trips are made to farms where outstanding herds and flocks are maintained. (Buric.)

For Advanced Undergraduates

A. H. 100. Advanced Livestock Judging. (2)

First semester. Two laboratory periods a week. Prerequisites, A. H. 90 and permission of instructor. An advanced course in the selection and judging of purebred and commercial meat and work animals. The most adept students enrolled in this course are chosen to represent the University of Maryland in intercollegiate livestock judging contests. (Buric.)

Animal Husbandry

A. H. 110. Feeds and Feeding. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, Chem. 1, 3. Elements of nutrition; source, characteristics, and adaptability of the various feeds to the several classes of livestock; feeding standards; the calculation and compounding of rations. (Leffel.)

A. H. 130. Beef Cattle Production. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of beef cattle, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Foster.)

A. H. 131. Sheep Production. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of sheep, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial flocks. (Leffel.)

A. H. 132. Swine Production. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of swine, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Young.)

A. H. 134. Light Horse Production. (1)

First semester. One lecture a week. Prerequisite, A. H. 1. Study of the light horse breeds with emphasis on the types of usefulness of each. A discussion of principles of selection and breeding of light horses is included in this course. (Leffel.)

A. H. 135. Light Horse Production. (1)

Second semester. One lecture a week. Prerequisite, A. H. 1. Included is a study of the organization of the light horse farm, proper methods of feeding and training, control of disease, treatment and care of injuries, sale of surplus stock. (Leffel.)

A. H. 140. Livestock Management. (3)

Second semester, alternate years. (Offered 1962-63.) One lecture and two laboratory periods a week. Prerequisite, A. H. 110. A course designed to offer practical experience in working with livestock, especially to students who lack farm experience. Provides opportunities for students to learn practical methods of handling and managing beef cattle, sheep, and swine. Practice and training in fitting animals for shows and sales. (Buric.)

A. H. 160. Meat and Meat Products. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, A. H. 1. Designed to give information on the processing and handling of the nation's meat supply. A study of the physical and structural qualities which effect the value of meat and meat products. Trips are made to packing houses and meat distributing centers. (Ferguson, Buric.)

A. H. 198. *Special Problems in Animal Husbandry*. (1-2) (4 cr. max.)
First and second semesters. Work assigned in proportion to amount of credit. Prerequisite, approval of staff. A course designed for advanced undergraduates in which specific problems relating to animal husbandry will be assigned. (Staff.)

A. H. 199 A-B. *Seminar*. (1, 1)
First and second semesters. Prerequisite, permission of instructor. Advanced undergraduates will be required to review literature, present reports and discuss assigned topics relating to animal husbandry. (Staff.)

For Advanced Undergraduates and Graduates

A. H. 111. *Animal Nutrition*. (3)
First semester. Three lectures a week. Prerequisites, Chem. 31, 32, 33, 34; A. H. 110. Graduate credit allowed, with permission of instructor. Processes of digestion, absorption, and metabolism of nutrients; nutritional balances; nature of nutritional requirements for growth, production and reproduction. (Leffel.)

A. H. 120. *Principles of Breeding*. (3)
Second semester. Three lectures a week. Prerequisites, Zool. 104 or Bot. 117 and A. H. 120 or A. H. 131 or A. H. 132 or Dairy 101. Graduate credit (1-3 hours), allowed with permission of instructor. The practical aspects of animal breeding, heredity, variation, selection, development, systems of breeding, and pedigree study are considered. (Green.)

A. H. S130. *Beef Cattle*. (1)
Summer session only. This course is designed primarily for teachers of vocational agriculture and Extension Service workers. Principles and practices underlying the economical production of beef cattle, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Foster.)

A. H. 150. *Livestock Markets and Marketing*. (2)
First semester. Two lectures a week. Prerequisite, A. H. 1. Graduate credit allowed, with permission of instructor. History and development of livestock markets and systems of marketing; trends of livestock marketing; effect of changes in transportation and refrigeration facilities; the merchandising of meat products. (Young.)

For Graduates

A. H. 205. *Advanced Breeding*. (2)
Second semester, alternate years. (Offered 1961-62.) Two lectures a week. Prerequisites, A. H. 120 or equivalent and Biological Statistics. This course deals with the more technical phases of heredity and variation; selection indices; breeding systems; inheritance in farm animals. (Green.)

A. H. 206. *Advanced Livestock Management*. (3)
First semester, alternate years. (Offered 1962-63.) Two lectures and one laboratory period a week. Prerequisite, approval of staff. An intensive study of the newer developments in animal breeding, animal physiology, animal nutrition, endocrinology, and other closely allied fields as they apply to the management and commercial production of livestock. (Staff.)

A. H. 207. *Advanced Livestock Nutrition*. (3)

Second semester, alternate years. (Offered 1962-63.) Three lectures a week. Prerequisites, Chem. 31, 32, 33, 34 or equivalent and A. H. 111, or permission of instructors. Experimental techniques and recent developments in the feeding and nutrition of beef cattle, sheep and swine. (Leffel, Young.)

A. H. 301. *Special Problems in Animal Husbandry*. (1-2) (4 cr. max.)

First and second semesters. Work assigned in proportion to amount of credit. Prerequisite, approval of staff. Problems will be assigned which relate specifically to the character of work the student is pursuing. (Staff.)

A. H. 302. *Seminar*. (1) (5 cr. max.)

First and second semesters. Students are required to prepare papers based upon current scientific publications relating to animal husbandry or upon their research work, for presentation before and discussion by the class. (Staff.)

A. H. 399. *Research*. (1-6)

First and second semesters. Credit to be determined by amount and character of work done. With the approval of the Head of the Department, students will be required to pursue original research in some phase of animal husbandry, carrying the same to completion, and report the results in the form of a thesis. (Staff.)

BOTANY

Professors: BAMFORD, GAUCH, WEAVER, D. T. MORGAN AND KRAUSS.

Associate Professors: BROWN, O. D. MORGAN, RAPPLEYE AND SISLER.

Assistant Professors: WILSON, PATERSON, GALLOWAY AND KRUSBERG.

Bot. 1. *General Botany*. (4)

First and second semesters. Summer session. Two lectures and two laboratory periods a week. Laboratory fee, \$6.00. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants.

Bot. 2. *General Botany*. (4)

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 1 or equivalent. Laboratory fee, \$6.00. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants, emphasizing their structure, reproduction, habitats, and economic importance.

Bot. 11. *Plant Taxonomy*. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$5.00. A study of the principles of plant classification, based on the collection and identification of local plants.

Bot. 20. *Diseases of Plants*. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$6.00. An introductory study of the symptoms and causal agents of plant diseases and measures for their control.

For Advanced Undergraduates

Bot. 110. Plant Microtechnique. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1. Laboratory fee, \$5.00. Principles and methods involved in the collection, preservation and preparation of plant materials for microscopic examination, including the preparation of temporary and permanent mounts, and photomicrography.

(Paterson.)

Bot. 199. Seminar. (1)

First and second semesters. Two semester hours maximum credit. Prerequisite, permission of instructor. Discussion and readings on special topics, current literature, or problems and progress in all phases of botany. Minor experimental work may be pursued if facilities and the qualifications of the students permit. For seniors only, majors and minors in botany or biological science.

(Brown.)

PLANT PHYSIOLOGY

For Advanced Undergraduates and Graduates

Bot. 101. Plant Physiology. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisites, Bot. 1 and General Chemistry. Laboratory fee, \$6.00. A survey of the general physiological activities of plants.

(Krauss.)

Bot. 102. Plant Ecology. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, Bot. 1 and permission of instructor. Laboratory fee, \$5.00. A study of plants in relation to their environments. Plant successions and formations of North America are treated briefly and local examples studied.

(Brown.)

For Graduates

Bot. 200. Plant Biochemistry. (2)

First semester. (Not offered 1961-1962.) Prerequisites, Bot. 101 and elementary organic chemistry, or equivalent. A study of the important substances in the composition of the plant body and the chemical changes occurring therein.

(Galloway.)

Bot. 201. Plant Biochemistry Laboratory. (2)

First semester. (Not offered 1961-1962.) Two laboratory periods a week. Prerequisite, Bot. 200 or concurrent registration therein. Laboratory fee, \$10.00. Application of apparatus and techniques to the study of the chemistry of plant materials.

(Galloway.)

Bot. 202. Plant Biophysics. (2)

Second semester. Prerequisite, Bot. 101 and introductory physics, or equivalent. An advanced course dealing with the operation of physical phenomena in plant life processes.

(Galloway.)

Bot. 203. Biophysical Methods. (2)

Second semester. Two laboratory periods a week. Laboratory course to accompany Bot. 202. Laboratory fee, \$10.00.

(Galloway.)

Bot. 204. Growth and Development. (2)

First semester. Prerequisite, 12 semester hours of plant science. A study of current developments in the mathematical treatment of growth and the effects of radiation, plant hormones, photoperiodism, and internal biochemical balance during the development of the plant. (Krauss.)

Bot. 205. Mineral Nutrition of Plants. (2)

Second semester. (Not offered, 1961-1962.) Reports on current literature are presented and discussed in connection with recent advances in the mineral nutrition of plants. (Krauss.)

Bot. 209. Physiology of Algae. (2)

First semester. Prerequisite, Bot. 201, the equivalent in allied fields, or permission of the instructor. A study of the physiology and comparative biochemistry of the algae. Laboratory techniques and recent advances in algal nutrition, photosynthesis, and growth will be reviewed. (Krauss.)

Bot. 210. Physiology of Algae-Laboratory. (1)

First semester. One laboratory period a week. Prerequisites, previous or concurrent enrollment in Bot. 209, and permission of instructor. Laboratory fee, \$10.00. Special laboratory techniques involved in the study of algal nutrition. (Krauss.)

PLANT MORPHOLOGY, CYTOLOGY AND TAXONOMY

For Advanced Undergraduates and Graduates

Bot. 111. Plant Anatomy. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 110, or equivalent. Laboratory fee, \$5.00. The origin and development of the organs and tissue systems in the vascular plants. (Rappleye.)

Bot. 113. Plant Geography. (2)

First semester. Prerequisite, Bot. 1, or equivalent. A study of plant distribution throughout the world and the factors generally associated with such distribution. (Brown.)

Bot. 115. Structure of Economic Plants. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 111. Laboratory fee, \$5.00. A detailed microscopic study of the anatomy of the chief fruit and vegetable crops. (Rappleye.)

Bot. 116. History and Philosophy of Botany. (1)

Second semester. Prerequisites, 20 semester hours credit in biological sciences, including Bot. 1 or equivalent. Discussion of the development and ideas and knowledge about plants, leading to a survey of contemporary work in botanical science. (Bamford.)

Bot. 117. General Plant Genetics. (2)

Second semester. Prerequisite, Bot. 1 or equivalent. The basic principles of plant genetics are presented; the mechanics of transmission of the hereditary factors in relation to the life cycle of seed plants, the genetics of specialized organs and tissues, spontaneous and induced mutations of basic and economic significance, gene action, genetic maps, the fundamentals of polyploidy, and genetics in relation to methods of plant breeding are the topics considered. (D. T. Morgan.)

Bot. 136. Plants and Mankind. (2)

First semester. Prerequisite, Bot. 1 or equivalent. A survey of the plants which are utilized by man, the diversity of such utilization, and their historic and economic significance. (Rappleye.)

Bot. 151S. Teaching Methods in Botany. (2)

Summer session. (Not offered 1961.) Five two-hour laboratory and demonstration periods per week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$5.00. A study of the biological principles of common plants, and demonstrations, projects, and visual aids suitable for teaching in primary and secondary schools.

Bot. 153S. Field Botany. (2)

Summer session. (Not offered 1961-62.) Prerequisite, Bot. 1 or General Biology. Five two-hour laboratory periods a week. Laboratory fee, \$5.00. Offered 1958 and in rotation with other courses thereafter. The identification of trees, shrubs, and herbs, emphasizing the native plants of Maryland. Manuals, keys, and other techniques will be used. Numerous short field trips will be taken. Each student will make an individual collection. (Brown.)

*For Graduates**Bot. 211. Cytology. (4)*

First semester. (Not offered, 1961-1962.) Two lectures and two laboratory periods a week. Prerequisite, introductory genetics. Laboratory fee, \$10.00. A detailed study of the chromosomes in mitosis and meiosis, and the relation of these to current theories of heredity and evolution. (Bamford, D. T. Morgan.)

Bot. 212. Plant Morphology. (3)

Second semester. (Not offered, 1961-62.) One lecture and two laboratory periods a week. Prerequisites, Bot. 11, Bot. 111, or equivalent. Laboratory fee, \$5.00. A comparative study of the morphology of the flowering plants, with special reference to the phylogeny and development of floral organs. (Rappleye.)

Bot. 215. Plant Cytogenetics. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, introductory genetics. Laboratory fee, \$10.00. An advanced study of the current status of plant genetics, particularly gene mutations and their relation to chromosome changes in corn and other favorable genetic materials. (D. T. Morgan.)

PLANT PATHOLOGY

*For Advanced Undergraduates and Graduates**Bot. 122. Research Methods in Plant Pathology. (2)*

First or second semester. Two laboratory periods a week. Prerequisite, Bot. 20, or equivalent. Laboratory fee, \$5.00. Advanced training in the basic research techniques and methods of plant pathology. (Wilson.)

Botany

Bot. 123. *Diseases of Ornamental Plants.* (2)

Second semester. Prerequisite, Bot. 20, or equivalent. Symptoms, control measures, and other pertinent information concerning the diseases which affect important ornamental plants grown in the eastern states. (Wilson.)

Bot. 124. *Diseases of Tobacco and Agronomic Crops.* (2)

First semester. (Not offered 1961-1962.) Prerequisite, Bot. 20, or equivalent. The symptoms and control of the diseases of tobacco, forage crops and cereal grains. (O. D. Morgan.)

Bot. 125. *Diseases of Fruit Crops.* (2)

First semester. Prerequisite, Bot. 20, or equivalent. Symptoms and control of the diseases affecting fruit production in the eastern United States. (Weaver.)

Bot. 126. *Diseases of Vegetable Crops.* (2)

Second semester. (Not offered 1961-1962.) Prerequisite, Bot. 20, or equivalent. The recognition and control of diseases affecting the production of important vegetable crops grown in the eastern United States.

Bot. 128. *Mycology.* (4)

Second semester. (Not offered 1961-1962.) Laboratory fee, \$6.00. An introductory study of the morphology, classification, life histories, and economics of the fungi. (Wilson.)

Bot. 141. *Nematode Disease of Plants.* (2)

First semester. (Not offered 1961-1962.) Prerequisite, Bot. 20 or permission of instructor. Designed to acquaint students in agricultural sciences with the role of nematodes as plant pathogens; study of representative diseases caused by nematodes; principles and practice of control. (Krusberg.)

Bot. 152S. *Field Plant Pathology.* (1)

Summer session. Daily lecture for three weeks. Prerequisite, Bot. 20, or equivalent. Given in accordance with demand. Laboratory fee, \$5.00. (Not offered 1961.) A course for county agents and teachers of vocational agriculture. Discussion and demonstration of the important diseases in Maryland crops.

For Graduates

Bot. 221. *Virus Diseases.* (3)

First semester. (Not offered 1961-1962.) Two lectures and one laboratory period a week. Prerequisites, Bot. 20 and Bot. 101. Laboratory fee, \$10.00. Consideration of the physical, chemical and physiological aspects of plant viruses and plant diseases. (Sisler.)

Bot. 223. *Physiology of Fungi.* (2)

Second semester. (Not offered 1961-1962.) Prerequisites, Organic Chemistry and Bot. 101 or the equivalent in bacterial or animal physiology. A study of various aspects of fungal metabolism, nutrition, biochemical transformations, fungal products, and mechanism of fungicidal action. (Sisler.)

Bot. 224. *Physiology of Fungi Laboratory.* (1)

Second semester. (Not offered 1961-1962.) One laboratory period per week. Prerequisite, Bot. 223 or concurrent registration therein. Laboratory fee, \$10.00. Application of equipment and techniques in the study of fungal physiology. (Sisler.)

Bot. 226. *Plant Disease Control.* (3)

First semester. Prerequisite, Bot. 20, or equivalent. An advanced course dealing with the theory and practices of plant disease control.

Bot. 241. *Plant Nematology.* (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, permission of instructor. Laboratory fee, \$10.00. Detailed study of the nematodes parasitic on plants, their general morphology, taxonomy, reproduction, embryology, physiology, and ecology. Special emphasis will be given to recent advances in plant nematology. (Krusberg.)

Bot. 301. *Special Problems in Botany.* (2 or 3)

First and second semester. Credit according to time scheduled and organization of course. Maximum credit toward an advanced degree for the individual student at the discretion of the Department. This course may be organized as a lecture series on a specialized advanced topic, or may consist partly, or entirely, of experimental procedures. It may be taught by visiting lecturers, or by resident staff members. Problems or topics may be in: A—Physiology; B—Ecology; C—Pathology; D—Mycology; E—Nematology; F—Cytology; G—Cytogenetics; H—Morphology I—Anatomy; or J—Taxonomy. (Staff.)

Bot. 302. *Seminar in Botany.* (1)

First and second semesters. Prerequisite, permission of the instructor. Discussion of special topics and current literature in all phases of botany. (Staff.)

Bot. 399. *Research.*

Credit according to work done. A minimum of 6 credit hours is required for the M.S. degree, and an additional minimum of 12 hours is required for the Ph.D. degree. Students must be qualified to pursue with profit the research to be undertaken. (Staff.)

DAIRY

Professors: DAVIS, ARBUCKLE AND KEENEY.

Associate Professor: MATTICK.

Assistant Professors: HEMKEN, KING, STEWART, VANDERSALL AND WILLIAMS.

Instructor: SEELEY.

Lecturer: PLOWMAN.

DAIRY HUSBANDRY

Dairy 1. *Fundamentals of Dairying.* (3)

Second semester. Two lectures and one laboratory period a week. Laboratory fee, \$3.00. This course is designed to cover the entire field of dairying. The content of the course deals with all phases of dairy cattle feeding, breeding and management and the manufacturing, processing, distribution and marketing of dairy products.

(Davis, Mattick.)

Dairy

Dairy 20. Dairy Production. (3)

First semester. Two lectures and one laboratory period per week. Prerequisite, Dairy 1. A comprehensive course in dairy breeds, selection of dairy cattle, dairy cattle nutrition, feeding and management. (Hemken.)

Dairy 30. Dairy Cattle Judging. (2)

Second semester. Two laboratory periods a week. This course offers complete instruction in the selection and comparative judging of dairy cattle. Trips to various dairy farms for judging practice will be made. (Stewart.)

For Advanced Undergraduates and Graduates

Dairy 102. Physiology of Reproduction. (3)

First semester. Alternate years. (Offered 1962-1963.) Two lectures and one laboratory per week. Prerequisite, permission of instructor. Anatomy and physiology of reproductive processes and artificial insemination of cattle. (Williams.)

Dairy 103. Physiology of Milk Secretion. (3)

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period per week. Prerequisite, permission of instructor. The anatomy and growth of the mammary gland and the metabolism and physiology of biosynthesis in the ruminant. (Williams.)

Dairy 105. Dairy Cattle Breeding. (3)

Second semester. (Offered 1962-1963.) Two lectures and one laboratory period a week. Prerequisites, Dairy 1, Zool. 104. A specialized course in breeding dairy cattle. Emphasis is placed on methods of evaluation and selection, systems of breeding, and breeding programs. (Plowman.)

Dairy 198. Special Problems in Dairying. (1-4) (4 cr. max.)

First and second semesters. Prerequisite, permission of Department. Credit in accordance with the amount and character of work done. Special problems will be assigned which relate specifically to the work the student is pursuing. (Staff.)

Dairy 199. Dairy Seminar. (1)

Second semester. Prerequisite, permission of Department. Presentation and discussion of current literature and research work in dairying. (Staff.)

DAIRY TECHNOLOGY

Dairy 40. Grading Dairy Products. (2)

Second semester. Two laboratory periods a week. Laboratory fee, \$3.00. Market grades and the judging of milk, butter, cheese, and ice cream. (King.)

For Advanced Undergraduates and Graduates

Dairy 108. Dairy Technology. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 1, Microb. 133, Chem. 1, 3. Laboratory fee, \$3.00. Composition standards for milk and milk products, critical interpretation and application of practical factory methods of analyses for fat and solids; quality tests. (Keeney.)

Dairy 109. Market Milk. (4)

Second semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 1, Microb. 133, Chem. 1, 3. Laboratory fee, \$3.00. Commercial aspects of the market milk industry relating to transportation, processing, and distribution; operation of a market milk plant; quality problems; chocolate milk, buttermilk and cottage cheese. (King.)

Dairy 110. Concentrated Milk, Cheese and Butter. (4)

Second semester. Two lectures and one five-hour laboratory a week. Prerequisites, Dairy 1, Microb. 133 or equivalent; Chem. 1, 3. Laboratory fee, \$3.00. Methods of production of butter, cheese, condensed and evaporated milk and milk products. Consideration is given to the procedures of processing, quality control and the physiochemical principles involved. (Mattick.)

Dairy 112. Ice Cream Making. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisite, Dairy 108. Laboratory fee, \$3.00. The ice cream industry; commercial methods of manufacturing ice cream; fundamental principles; ingredients; quality control. (Arbuckle.)

Dairy 116. Dairy Plant Management. (3)

Second semester. Two lecture periods and one three-hour laboratory period per week. Prerequisites, at least three advanced dairy products technology courses. Principles of dairy plant management record systems; personnel, plant design and construction; dairy machinery and equipment. (Mattick.)

*For Graduates in Dairy Husbandry and Dairy Technology**Dairy S101. Advanced Dairy Production. (1)*

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It includes a study of the newer discoveries in dairy cattle nutrition, breeding and management. (Staff.)

Dairy 201. Advanced Ruminant Nutrition. (3)

First semester, alternate years. (Offered 1962-1963.) Two one-hour lectures and one two-hour laboratory per week. Prerequisite, permission of Department. Biochemical, physiological, and bacteriological aspects of the nutrition of ruminants and other animals. (Davis.)

Dairy 202. Research Methods. (3)

First semester, alternate years. (Offered 1961-1962.) One lecture and two laboratory periods per week. Prerequisite, permission of instructor. The application of biochemical, physio-chemical, and statistical methods to problems in biological research. (Stewart.)

Dairy 301. Special Problems in Dairying. (1-5) (4 cr. max., M.S.; 8 cr. max., Ph.D.)

First and second semesters. Prerequisite, permission of professor in charge of work. Credit in accordance with the amount and character of work done. Methods of conducting dairy research and the presentation of results are stressed. A research problem which relates specifically to the work the student is pursuing will be assigned. (Staff.)

Entomology

Dairy 302. Advanced Dairy Seminar. (1)

First and second semesters. M.S. candidates can obtain 4 credits; Ph.D. candidates can obtain 6 credits. Assigned readings, presentation and discussion of timely topics and fundamental research in dairy science. (Staff.)

Dairy 399. Research. (1-8)

First and second semesters. Credit to be determined by the amount and quality of work done. Original investigation by the student of some subject assigned by the major professor, the completion of the assignment and the preparation of a thesis in accordance with requirements for an advanced degree. (Staff.)

ENTOMOLOGY

Professor: BICKLEY.

Associate Professor: JONES.

Assistant Professors: ABRAMS, HARRISON, HAVILAND AND JOHNSON.

Lecturer: SHEPARD.

Ent. 1. Introductory Entomology. (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, one semester of college zoology. Laboratory fee, \$3.00. The position of insects in the animal kingdom, their gross structure, classification into orders and principal families and the general economic status of insects. A collection of common insects is required.

Ent. 4. Beekeeping. (2)

First semester. A study of the life history, behavior and seasonal activities of the honeybee, its place in pollination of flowers with emphasis on plants of economic importance and bee lore in literature.

Ent. 20. Insect Pests of Agricultural Crops. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1 and Bot. 1. Laboratory fee, \$3.00. The recognition, biology, and control of insects injurious to fruit and vegetable crops, field crops and stored products.

For Advanced Undergraduates and Graduates

Ent. 100. Advanced Apiculture. (3)

Second semester. One lecture and two three-hour laboratory periods a week. Prerequisite, Ent. 4. Laboratory fee, \$3.00. The theory and practice of apiary management. Designed for the student who wishes to keep bees or requires a practical knowledge of bee management. (Abrams.)

Ent. 105. Medical Entomology. (3)

First semester. Two lectures and one two-hour laboratory period a week. Prerequisite, Ent. 1, or consent of the Department. Laboratory fee, \$3.00. A study of insects and related arthropods that affect the health and comfort of man directly and as vectors of disease. In discussions of the control of such pests the emphasis will be upon community sanitation. (Jones.)

Ent. 107. Insecticides. (2)

Second semester. Prerequisite, consent of the Department. The development and use of contact and stomach poisons, fumigants and other important chemicals, with reference to their chemistry, toxic action, compatibility, and host injury. Recent research emphasized. (Shepard.)

Ent. 109. Insect Physiology. (2)

Second semester. Two lectures and occasional demonstrations. Prerequisite, consent of the Department. The functioning of the insect body with particular reference to blood, circulation, digestion, absorption, excretion, respiration, reflex action and the nervous system, and metabolism. (Jones.)

Ent. 115. Quarantine Procedures. (2)

Second semester. Prerequisite, consent of the Department. Lectures on the principles and procedures involved in preventing the introduction of foreign pests and the limitation of spread of endemic or introduced pests. (Johnson.)

Ent. 116. Insect Pests of Ornamentals and Greenhouse Plants. (3)

Second semester. Two lectures and one two-hour laboratory period a week. Prerequisites, Bot. 1 and Zool. 1. Laboratory fee, \$3.00. The recognition, biology, and control of insects injurious to plants grown in ornamental plantings, nurseries, and under glass. (Haviland.)

Ent. 119. Insect Pests of Domestic Animals. (2)

First semester. One lecture and one two-hour laboratory period a week. Prerequisite, Ent. 1, or consent of the Department. Laboratory fee, \$3.00. The recognition, biology, and control of insects and related arthropods injurious to horses, cattle, hogs, sheep, goats, and poultry. (Haviland.)

Ent. 120. Insect Taxonomy and Biology. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Ent. 1. Laboratory fee, \$3.00. Introduction to the principles of systematic entomology and the study of all orders and the important families of insects; immature forms considered. (Bickley.)

Ent. S121. Entomology for Science Teachers. (4)

Summer. Five lectures and five two-hour laboratory periods a week. Laboratory fee, \$3.00. This course will include the elements of morphology, taxonomy and biology of insects using examples commonly available to high school teachers. It will include practice in collecting, preserving, rearing and experimenting with insects insofar as time will permit. (Haviland.)

Ent. 198. Special Problems. (1-3)

First and second semesters. Credit and prerequisites, to be determined by the Department. Investigations of assigned entomological problems. (Staff.)

Ent. 199. Seminar. (1, 1)

First and second semesters. Prerequisite, senior standing. Presentation of original work, reviews and abstracts of literature. (Staff.)

For Graduates

Ent. 203. Advanced Insect Morphology. (3)

Second semester. (Not offered 1961-1962.) One lecture and two three-hour laboratory periods a week. Laboratory fee, \$3.00. Insect structure, with special reference to functions. Emphasis on internal anatomy. Given in preparation for advanced work in physiology or research in morphology. (Haviland.)

Ent. 205. Insect Ecology. (2)

Second semester. One lecture and one two-hour laboratory period a week. Pre requisite, consent of the Department. Laboratory fee, \$3.00. A study of fundamental factors involved in the relationship of insects to their environment. Emphasis is placed on the insect as a dynamic organism adjusted to its surroundings. (Harrison.)

Ent. 206. Culicidology. (2)

Second semester, alternate years. One lecture and one three-hour laboratory period a week. Laboratory fee, \$3.00. The classification, distribution, ecology, biology, and control of mosquitoes. (Bickley.)

Ent. 207. Advanced Insect Physiology. (4)

Second semester, alternate years. Two lectures and two three-hour laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, one year of Organic Chemistry and Ent. 109 or equivalent. In this course students rear experimental insects, make up reagents and solutions to be used, set up equipment, calibrate it, and make detailed measurements and observations on the functions of selected organ systems. (Jones.)

Ent. 301. Advanced Entomology. (1-6)

Credit and prerequisites to be determined by the Department. First and second semesters. Studies of minor problems in morphology, taxonomy and applied entomology, with particular reference to the preparation of the student for individual research. (Staff.)

Ent. 399. Research.

First and second semesters. Required of graduate students majoring in entomology. This course involves research on an approved project. A dissertation suitable for publication must be submitted at the conclusion of the studies as a part of the requirement for an advanced degree. (Staff.)

HORTICULTURE

Professors: HAUT, KRAMER, LINK, SCOTT, SHANKS, STARK AND THOMPSON.

Associate Professors: REYNOLDS, SHOEMAKER AND WILEY.

Instructors: HOGAN AND TODD.

Hort. 5, 6. Tree Fruit Production. (3, 2)

First and second semesters. (Second semester offered in alternate years only, 1961-62.) One or two lectures and one laboratory period a week. Courses must be taken in sequence. Prerequisite, Bot. 1. A study of commercial varieties and principles and practices in fruit production, harvesting and storage. One field trip required.

Hort. 11. Greenhouse Management. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A detailed study of greenhouse construction and management.

Hort. 16. Garden Management. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. The various species of annuals, herbaceous perennials, bulbs, bedding plants, and roses and their cultural requirements.

Hort. 22. Landscape Gardening. (2)

First semester. The theory and general principles of landscape gardening and their application to private and public areas.

Hort. 56. Elements of Landscape Design. (2)

Second semester. Two laboratory periods per week. A course dealing with basic design in the use of trees, shrubs, evergreens, annual and perennial flowering plants on home properties.

Hort. 58. Vegetable Production. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices of commercial vegetable production.

Hort. 59. Berry Production. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices involved in the production of small fruits including grapes, strawberries, raspberries, blackberries, and cranberries.

Hort. 61. Introduction to Fruit and Vegetable Processing. (1)

Second semester. Early history and development of the various types of preservation of horticultural crops, such as canning, freezing, dehydration, pickling or brining. The relative importance of these methods on state, national and world-wide bases are emphasized.

Hort. 62. Plant Propagation. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of principles and practices of propagation of horticultural plants.

Hort. 63. Flower Store Management. (3)

Second semester, alternate years. (Offered 1962-63.) Two lectures and one laboratory period a week. Prerequisite, Hort. 11. Laboratory fee, \$5.00. A study of the operation and management of a flower store. Laboratory period devoted to principles and practice of floral arrangements and decoration.

For. 30. Elements of Forestry. (3)

Second semester, alternate years. (Offered 1961-62.) Two lectures and one two-hour laboratory period per week. Prerequisite, Bot. 1. Not open to freshmen. A general survey of the field of forestry, including timber values, conservation, protection, silviculture, utilization, measurement, engineering, recreation and lumbering. Principles and practices of woodland management.

Horticulture

For Advanced Undergraduates

Hort. 152. *Landscape Design*. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Hort. 22; prerequisite or concurrently, Hort. 107. A consideration of the principles of landscape design and supplemented by direct application in the drafting room.

(Shoemaker.)

Hort. 153. *Landscape Design*. (3)

Second semester. Three laboratory periods a week. Prerequisite, Hort. 152. Advanced landscape design.

(Shoemaker.)

Hort. 199. *Seminar*. (1)

First semester. Oral presentation of the results of investigational work by reviewing recent scientific literature in the various phases of horticulture.

(Staff.)

For Advanced Undergraduates and Graduates

Hort. 101. *Technology of Fruits*. (3)

First semester. (Offered 1962-63.) Prerequisites, Hort. 6, Bot. 101. A critical analysis of research work and application of the principles of plant physiology, chemistry, and botany to practical problems in commercial production.

(Thompson.)

Hort. 103. *Technology of Vegetables*. (3)

Second semester. (Offered 1961-62.) Prerequisites, Hort. 58, Bot. 101. For a description of these courses see the general statement under Hort. 101.

(Stark.)

Hort. 105. *Technology of Ornamentals*. (2)

First semester. Prerequisite, Bot. 101. A study of the physiological plant processes as related to the growth, flowering, and storage of floriculture and ornamental plants.

(Link.)

Hort. 107, 108. *Woody Plant Materials*. (3,3)

First and second semesters. Prerequisite, Bot. 11. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings.

(Hogan.)

Hort. 114. *Systematic Horticulture*. (3)

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. A study of the origin, taxonomic relationship and horticultural classification of fruits and vegetables.

Hort. S115. *Truck Crop Management*. (1)

Summer session only. Primarily designed for teachers and vocational agriculture and extension agents. Special emphasis will be placed upon new and improved methods of production of the leading truck crops. Current problems and their solution will receive special attention.

Hort. 123. *Quality Control*. (3)

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Principles involved in the evaluation of factors of quality in horticultural products including appearance, kinesthetic flavor and sanitation factors and statistical presentation of results.

(Kramer.)

Hort. 124. Quality Control Systems. (3)

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisite, Hort. 123. Development of quality control systems designed to maintain specific levels of quality for selected food products. (Kramer.)

Hort. S124. Tree and Small Fruit Management. (1)

Summer session only. Primarily designed for vocational agriculture teachers and county agents. Special emphasis will be placed upon new improved commercial methods of production of the leading tree and small fruit crops. Current problems and their solution will receive special attention.

Hort. S125. Ornamental Horticulture. (1)

Summer session only. A course designed for teachers of agriculture, home demonstration agents and county agents. Special emphasis will be given to the development of lawns, flowers and shrubbery to beautify homes.

Hort. 150, 151. Commercial Floriculture. (3, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Hort. 11. Growing and handling bench crops and potted plants, and the marketing of cut flowers. (Link.)

Hort. 155, 156. Fundamentals of Fruit and Vegetable Processing. (3, 3)

First and second semesters, alternate years. (Offered 1962-63.) Two lectures and one laboratory period a week. Prerequisites, Chem. 32, 34, Hort. 61. Laboratory fee, \$5.00 per semester. The fundamentals of canning, freezing and preserving of horticultural crops with emphasis on the chemical, biochemical and microbiological aspects of processing. (Wiley.)

Hort. 159. Nursery Management. (3)

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 62, 107, 108. A study of all phases of commercial nursery management and operations. (Hogan.)

Hort. 160. Arboriculture. (3)

Second semester, alternate years. (Offered 1962-63.) Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 107 and 108. A study of the planting and maintenance of ornamental shrubs and trees, including basic principles of park, institution and estate maintenance. (Hogan.)

Hort. 161. Physiology of Maturation and Storage of Horticultural Crops. (2)

Second semester, alternate years. (Offered 1962-63.) Two lectures a week. Prerequisite, Bot. 101. Factors related to maturation and application of scientific principles to handling and storage of horticultural crops. (Scott.)

Hort. 198. Special Problems. (2, 2) (4 cr. max.)

First and second semesters. Credit arranged according to work done. For major students in horticulture or botany. Four credits maximum per student. (Staff.)

For Graduates

Hort. 200. Experimental Procedures in Plant Sciences. (3)

First semester. Prerequisite, permission of instructor. Organization of research projects

Poultry Husbandry

and presentation of experimental results in the field of biological science. Topics included will be: sources of research financing, project outline preparation, formal progress reports, public and industrial supported research programs, and technical and popular presentation of research data. (Haut.)

Hort. 201, 202. *Experimental Pomology*. (3, 3)

First and second semesters. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in pomology. (Thompson.)

Hort. 203, 204, 205. *Experimental Olericulture*. (2, 2, 2)

First semester and in sequence. Prerequisite, Bot. 101, a systematic review of scientific knowledge and practical observations as applied to commercial practices in olericulture. (Stark.)

Hort. 206. *Experimental Floriculture*. (3)

First semester. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in floriculture. (Link.)

Hort. 207. *Methods of Horticultural Research*. (3)

Second semester. One lecture and one four-hour laboratory period a week. A critical study of research methods which are or may be used in horticulture. (Scott.)

Hort. 210. *Experimental Processing*. (2)

Second semester. Prerequisite, permission of instructor. A systematic review of scientific knowledge and practical observations as applied to commercial practices in processing. (Kramer.)

Hort. 302. *Advanced Seminar*. (1, 1)

First and second semester. Oral reports with illustrative material are required on special topics or recent research publications in horticulture. Three credit hours maximum allowed toward the M.S. degree or six credits maximum toward the Ph.D. degree. (Haut, Staff.)

Hort. 399. *Advanced Horticultural Research*. (2-12)

First and second semesters. Credit granted according to work done. (Staff.)

POULTRY HUSBANDRY

Professors: SHAFFNER AND COMBS.

Associate Professor: QUIGLEY.

Assistant Professors: CREEK, HELBACKA AND WILCOX.

P. H. 1. *Poultry Production*. (3)

First semester. Two lectures and one laboratory period a week. This is a general comprehensive course covering all phases of modern poultry husbandry practices, including breeds, incubation, brooding, housing, feeding, culling, marketing, caponizing, and the economics of production and distribution of poultry products. (Quigley.)

P. H. 3. *Physiology of Hatchability*. (3)

Second semester, alternate years. (Not offered 1961-62.) Two lectures and one laboratory period a week. The physiology of embryonic development as related to

principles of hatchability and problems of incubation encountered in the hatchery industry are discussed. Laboratory exercises stressing fundamentals of hatchability are assigned. (Shaffner.)

P. H. 59. Advanced Poultry Judging. (1)

First semester. Prerequisite, P. H. 1. One lecture or laboratory period per week. The theory and practice judging and culling by physical means is emphasized, including correlation studies of characteristics associated with productivity. Contestants for regional collegiate judging competitions will be selected from this class. (Quigley.)

For Advanced Undergraduates

P. H. 101. Poultry Nutrition. (3)

First semester, alternate years. (Not offered 1960-61.) Two lectures and one laboratory period a week. Nutritive requirements of poultry and the ingredients used to meet these requirements are presented. Studies are made of various nutritional diseases commonly encountered under practical conditions. (Combs.)

P. H. 103. Commercial Poultry Management. (2)

Second semester, alternate years. (Not offered in 1960-61.) Prerequisite, ten hours of poultry husbandry, including P. H. 1. A symposium on finance, investment, plant layout, specialization, purchase of supplies, and management problems in baby chick, egg, broiler, and turkey production; foremanship, advertising, selling, by-products, production and financial records. Field trips required. (Quigley.)

For Advanced Undergraduates and Graduates

P. H. 104. Technology of Market Eggs and Poultry. (3)

First semester, alternate years. (Not offered 1961-62.) Two lectures and one laboratory period per week. A study of the technological factors concerned with the processing, storage, and marketing of eggs and poultry, and of the factors affecting their quality and grading. (Helback.)

P. H. 105. Poultry Genetics. (3)

Second semester, alternate years. (Not offered 1961-62.) Prerequisites, P. H. 1 and Zool. 104. Two lectures and one laboratory period per week. Inheritance of factors related to egg and meat production and quality are stressed. An experiment utilizing procedures of pedigreed matings will be performed in the laboratory. (Wilcox.)

P. H. 109. Avian Physiology. (3)

First semester. Two lectures and one laboratory period per week. Prerequisites, Zool. 1 and V. S. 108. (V. S. 108 may be taken simultaneously with P. H. 109.) The basic physiology of the bird is discussed, excluding the reproductive system. Special emphasis is given to physiological differences between birds and other vertebrates. (Wilcox.)

A. E. 117. Economics of Marketing Eggs and Poultry. (3)

Second semester. Three lectures per week. (See Agricultural Economics, A. E. 117.)

Poultry Husbandry

Poultry Hygiene, see Veterinary Science, V. S. 107.

Avian Anatomy, see Veterinary Science, V. S. 108.

P. H. S111. Poultry Breeding and Feeding. (1)

Summer session only. This course is designed primarily for teachers of vocational agriculture and extension service workers. The first half will be devoted to problems concerning breeding and the development of breeding stock. The second half will be devoted to nutrition. (Combs, Wilcox.)

P. H. S112. Poultry Products and Marketing. (1)

Summer session only. This course is designed primarily for teachers of vocational agriculture and county agents. It deals with the factors affecting the quality of poultry products and with hatchery management problems, egg and poultry grading, preservation problems and market outlets for Maryland poultry. (Helbacka.)

P. H. 198. Special Poultry Problems. (1-2) (3 cr. max.)

First and second semesters. For senior poultry students. The student will be assigned special problems in the field of poultry for individual study and report. The poultry staff should be consulted before any student registers for this course. (Staff.)

For Graduates

P. H. 202. Advanced Poultry Nutrition. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, P. H. 101, Chem. 31, 32, 33 and 34, or equivalent, or permission of instructor. A fundamental study of the dietary role of proteins, minerals, vitamins, antibiotics, and carbohydrates is given as well as a study of the digestion and metabolism of these substances. Deficiency diseases as produced by the use of synthetic diets are considered. (Combs.)

P. H. 203. Physiology of Reproduction of Poultry. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, P. H. 102 or its equivalent. The role of the endocrines in avian reproduction, is considered. Fertility, sexual maturity, broodiness, egg formation, ovulation, and the physiology of oviposition are studied. Comparative mammalian functions are discussed. (Shaffner.)

P. H. 205. Poultry Literature. (1-4)

First and second semesters. Readings on individual topics are assigned. Written reports required. Methods of analysis and presentation of scientific material are discussed. (Staff.)

P. H. 207. Poultry Nutrition Laboratory. (2)

First semester, alternate years. (Not offered 1961-62.) One lecture and one laboratory period a week. To acquaint graduate students with common basic nutrition research techniques useful in conducting experiments with poultry. Actual feeding trials with chicks, as well as bacteriological and chemical assays will be performed. (Creek.)

P. H. 302. Poultry Seminar. (1) (2 cr. max.)

First and second semesters. Oral reports of current researches by staff members, graduate students, and guest speakers are presented. (Staff.)

P. H. 399. Poultry Research. (1-6)

First and second semesters. Credit in accordance with work done. Practical and fundamental research with poultry may be conducted under the supervision of staff members toward the requirements for the degrees of M. S. and Ph.D. (Staff.)

VETERINARY SCIENCE

Professors: BRUECKNER, POELMA, DE VOLT AND REAGAN.

Associate Professor: BYRNE.

Assistant Professor: WIERSIG.

For Advanced Undergraduates and Graduates

V. S. 101. Anatomy and Physiology. (3)

First semester. Two lectures and one laboratory period a week. Normal structure of the domesticated animals; normal physiological activities; interrelationship of structure and function. (Wiersig.)

V. S. 102. Animal Hygiene (3)

Second semester. Two lectures and one laboratory period a week. Nature of disease; immunity; prevention and control; common diseases of farm animals. (Wiersig.)

V. S. 107. Poultry Hygiene. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, Microb. 1, P. H. 1. Virus, bacterial, and protozoon diseases; parasitic diseases; prevention, control, and eradication. (De Volt.)

V. S. 108. Avian Anatomy. (3)

First semester. Two lectures and one laboratory a week. Prerequisite, Zool. 1. Gross and microscopic structure, dissection and demonstration. (De Volt.)

For Graduates

V. S. 203. Electron Microscopy. (2)

First and second semesters. One lecture and one laboratory period a week. Theory of the electron microscope, preparation of specimens, manipulations, photography. (Reagan, Byrne.)

V. S. 399. Animal Disease Research. (2-6)

First and second semesters. Credit in accordance with work done. Prerequisite, veterinary degree or consent of staff. Studies of practical disease phases. (Poelma, DeVolt, Wiersig, Byrne, Brueckner.)

THE AGRICULTURAL EXPERIMENT STATION

IRVIN C. HAUT, Ph.D., *Director*

The Agricultural Experiment Station serves Maryland agriculture in much the same manner as research laboratories serve large corporations. Maryland agriculture is made up of over thirty thousand individual businesses, and there

is not sufficient capital, or sufficient income so that each one of these can conduct research. Yet the problems which face a biological undertaking such as farming, are as numerous and perplexing as the problems of any business. Certainly our production of food would be much more costly if it were not for the research results that have been obtained by the Agricultural Experiment Station.

The station is a joint federal and state undertaking. Passage of the Hatch Act in 1887, which made available a grant in aid to each state for the purpose of establishing an agricultural experiment station, gave a great impetus to the development of research work in agriculture. This work was further encouraged by the passage of the Adams Act in 1906, the Purnell Act in 1925, the Bankhead-Jones Act in 1935, and the Flannagan-Hope Act of 1946.

The work of the Maryland Agricultural Experiment Station which is supported by these Acts and by state appropriations centers at College Park. On the University campus are to be found laboratories for studying insects and diseases, soil fertility problems, botanical problems, and others. This is also the location of the livestock and dairy barns with their experimental herds. About eight miles from the campus at College Park, near Beltsville, the Plant Research Farm of about 500 acres is devoted to work connected with soil fertility, plant breeding and general crop production problems. An experimental farm near Upper Marlboro is devoted to the problems of tobacco growing and curing. A farm near Salisbury is devoted to solution of the problems of producers of broilers and of vegetable crops in the southern Eastern Shore area. Two experimental farms are operated near Ellicott City; one is devoted to livestock problems and the other to dairy cattle nutrition and forage research. Also tests of various crop and soil responses are distributed throughout the state. These different locations provide the opportunity to conduct experiments under conditions existing where the results will be put into practice. The solution of many difficult problems in the past has given the Station an excellent standing with farmers of the state.

AGRICULTURAL EXTENSION SERVICE

PAUL E. NYSTROM, *Director*

Cooperative Extension work in agriculture and home economics, established by state and federal laws in 1914, extends practical agricultural and home information beyond the classrooms of the University of Maryland to young people, farmers, homemakers, and people in businesses relating to agriculture and home economics.

It is conducted under a Memorandum of Understanding between the Extension Service of the University of Maryland and the United States Department of Agriculture. The Extension Service is the educational arm in Maryland of the United States Department of Agriculture.

The work of the Extension Service is cooperatively financed by the federal, state and county governments. In each county there is a County Agricultural

Agent and a County Home Demonstration Agent. In counties where funds permit, and work requires, there are associates and assistants. Backed by a staff of specialists at the University, these agents are in close contact with local people and their problems.

Practically every phase of agriculture and home life comes within the scope of Extension work. The Extension Service teaches largely by demonstrations and carries the scientific and economic results of the Experiment Station and the U. S. Department of Agriculture to people in ways that they understand and use.

In Maryland, the Extension Service works in close association with all rural groups and organizations. In addition to work on the farms and in the farm homes, the Extension program is aimed at the many rural and urban people who service the agricultural industries of the state, including consumers.

In addition to work with adults, thousands of boys and girls are developed as leaders and given practical education in 4-H Clubs. Through their diversified activities, the boys and girls are given a valuable type of instruction and training, and are afforded an opportunity to develop self-confidence, perseverance, citizenship and leadership.

The Extension Service in cooperation with the College of Agriculture and the Experiment Station arranges and conducts short courses in various lines, many of which are held at the University. Some of these courses have been held regularly over a period of years and others are added as the need and demand develop.

RURAL WOMEN'S SHORT COURSE

The Rural Women's Short Course has provided special educational opportunities for Maryland women since 1923. The attendance has grown steadily to more than 1,000 women from all counties and Baltimore City. The short course program lasts for one week and is held on the University campus.

BOYS' AND GIRLS' CLUB WEEK

Members and leaders of boys' and girls' 4-H Clubs come to the University for a week each year, usually in August. Class work and demonstrations are given by specialists and a broad program of education, inspiration and recreation is provided.

CANNERS' SHORT COURSE

For many years a short course has been held each year to aid canners in keeping abreast of the latest developments in their industry. It is usually held in February.

Service and Control Programs

OTHER SHORT COURSES

Courses for nurserymen, florists, poultry flock selection agents, poultry products marketing, beekeepers, greenkeepers, sanitarians, conservation, cow testers, and feed manufacturers and distributors are among those held in recent years. Announcement of such courses is made to those who may be interested.

SERVICE AND CONTROL PROGRAMS

The state law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture. Numerous services are performed by technically trained personnel which result in the improvement and maintenance of high standards in the production, processing and distribution of farm products.

In addition the improvement of many control or regulatory activities are authorized by the state law and are carried out by the following agencies responsible to the State Board of Agriculture.

DAIRY INSPECTION SERVICE

The Maryland Dairy Inspection Law became effective June 1, 1935. However, the present activities of the Dairy Inspection Service are based on Article 43 of the Annotated Code of Maryland, Section 542 through Section 558, of the Laws of Maryland, 1951. The Dairy Department is charged with the administration of the law.

The purposes of the Dairy Inspection Law are as follows: (a) To insure producers who sell milk and cream by measure, weight and butterfat test, that samples, weights and tests used as the basis of payment for such products are correct; (b) To insure dealers who purchase milk and cream that their agents shall correctly weigh, sample, and test these products; (c) To insure correctness of tests made for official inspections or for public record. To achieve these purposes the law requires the licensing of all dealers who purchase milk and cream from producers, whether the purchases are by measure, weight, or test, and the licensing of all persons sampling, weighing and testing milk and cream when the results of such samples, weights, and tests are to serve as a basis of payment to producers.

Duties of the Dairy Inspection Service, resulting from enforcement of the Inspection Law, deal with the calibration of that glassware used in testing milk and cream and the rejection of inaccurate items; examination of all weighers, samplers, and testers and the issuance of licenses to those satisfactorily passing the examination; and inspection of the pertinent activities of weighers, samplers, testers and dairy plants.

DEPARTMENT OF MARKETS

All of the activities of the Department of Markets are geared to the importance in modern agriculture of the problems of marketing farm products. The

Department endeavors to serve the every-day needs of the farmer in marketing his products and to insure a fair and equitable treatment of the farmer in all dealings which he may have concerning the marketing of his products. In the performance of these responsibilities, the Department carries out programs in extension marketing, conducts market surveys, compiles and disseminates marketing information and market data, operates a market news service, provides an agricultural inspection and grading service, maintains a consumer information service and enforces and interprets the agricultural marketing laws of the state. The regulatory aspects of the Department's functions are carried out as the agent of the State Board of Agriculture under the authority of various state laws relating to the marketing of farm products. A close working relationship is maintained with other specialists in the Extension Service, all departments of the Agricultural Marketing Service, the Maryland Crop Reporting Service, and the Agricultural Marketing Service of the United States Department of Agriculture. The voluntary and dynamic cooperation of the personnel in these various activities brings to bear on agricultural marketing problems an effective combination of research, education, and service.

The passage of the Federal Agricultural Research and Marketing Act gave additional impetus to the study and solution of agriculture's marketing problems. The Department of Markets is largely responsible for developing the state program under Title II of this act.

Information and assistance in all phases of marketing is available to all interested persons. When a sufficient number of individuals are interested, marketing specialists hold meetings and demonstrations in local communities. Field offices are located in Baltimore, Salisbury, Hancock and Pocomoke. Department headquarters is at the University of Maryland, College Park, Maryland.

MARYLAND LIVE STOCK SANITARY SERVICE

The Live Stock Sanitary Service is organized under the State Board of Agriculture and is charged with the responsibility of preventing the introduction of diseases of animals and poultry from outside of the state and with control and eradication of such diseases within the state. The service is further charged with the responsibility of cooperating with the State Department of Health in the suppression of diseases of animals and poultry which affect the public health.

Control projects in bovine tuberculosis, Johne's disease, and bovine brucellosis are conducted in cooperation with the Agricultural Research Service of the United States Department of Agriculture. The field force of state employed veterinarians is augmented by a number of federal veterinarians in the conduct of these control programs. The control of swine brucellosis, pullorum disease in poultry, rabies, and many other disease conditions is conducted by the state without outside assistance.

Facilities for the diagnosis of a wide variety of diseases are furnished in

Service and Control Programs

the main laboratory at College Park and in the branch laboratories at Salisbury, Centreville, Bel Air, Frederick, Hagerstown and Oakland.

SEED INSPECTION SERVICE

The Seed Inspection Service administers the state seed law; inspects seeds sold throughout the state; collects seed samples for laboratory examination; reports the results of the examinations to the parties concerned; publishes summaries of these reports which show the relative reliability of the label information supplied by wholesale seedsmen; cleans and treats tobacco seed intended for planting in the state; makes analyses tests, and examinations of seed samples submitted to the laboratory; and advises seed users regarding the economic and intelligent use of seeds. The Service also cooperates with the Agricultural Marketing Service of the United States Department of Agriculture in the enforcement of the Federal Seed Act in Maryland.

The work of the Seed Inspection Service is not restricted to the enforcement of the seed law however, for state citizens may submit seed samples to the laboratory for analysis, test, or examination. Specific information regarding suitability for planting purposes of lots of seeds is thus made available to individuals without charge. The growth of this service has been steady since the establishment of the laboratory in 1912. Most Maryland citizens, city and country, are directly interested in seeds for planting in flower-beds, lawns, gardens, or fields.

STATE HORTICULTURAL DEPARTMENT

In 1896 the subject of nursery inspection was given consideration under Article 48, of the Code of Public General Laws, under the title "Inspection" as designated by Chapter 290 of the "Acts of the General Assembly of Maryland of 1896." In 1898 certain sections of Article 48 were repealed and re-enacted with amendments, under a new sub-title, "State Horticultural Department," and eight new sections were added thereto. In 1916 the sections were again re-enacted with such changes in the wording as were necessary to bring them into conformity with the reorganization of the Maryland State College of Agriculture and Experiment Station and its Board of Trustees. Subsequently all regulatory functions including newly enacted Articles in regard to bee diseases, mosquitoes, and aerial spraying, were transferred to the State Board of Agriculture under Chapter 391 of the "Acts of the General Assembly."

Work in this field is designed to control insects and plant diseases and to protect the public in the purchase of products of nurserymen and florists. A considerable part of the time of the staff is occupied by inspection of orchards, crops, nurseries, greenhouses, and floral establishments. Cooperation with the federal government in the inspection and certification of materials that come under quarantine regulations is another major function of the Department. The Department enforces the provisions of the Apiary Law, including inspection of apiaries. This service includes control and eradication of diseases of strawberries and other small

fruits, diseases of apples, peaches, etc., inspection and certification of potatoes and sweet potatoes for seed, control of white pine blister rust, Dutch elm disease, etc.

STATE DEPARTMENT OF DRAINAGE

The State Department of Drainage was established in 1937. Its duties are to promote and encourage the drainage of agricultural lands in the state, to correlate the activities of the local drainage organizations in the state and to cooperate with state and federal agencies in the interest of a permanent program of improved drainage.

STATE INSPECTION SERVICE

Feeds, Fertilizers, Agricultural Liming Materials and Pesticides

The protection of consumers and ethical manufacturers of agricultural products against fraudulent practices, makes certain specialized statutes necessary. These laws are classified as correct labeling acts, and are enforced by the State Inspection Service. Included in this legislation are the State Feed, Fertilizer, Agricultural Liming Materials, and Pesticide laws.

Work of enforcing these laws is divided into five distinct phases: First, the commodities concerned must be registered under acceptable brand names, and with proper labels; second, official samples must be collected by the Department's inspectors from all parts of the state; third, chemical and physical examinations must be made to establish that professed standards of quality are being met; fourth, results must be assembled and published in concise and understandable form, with the reports made available to all interested persons; and fifth, the prosecution of those responsible for flagrant violations.

Hundreds of tests also are made annually on feed, fertilizer, and lime samples submitted by state purchasers. No charge is made for this service.

Throughout its existence, this Department has cooperated with comparable federal agencies in every possible way. In this activity it has attained not only state-wide, but also a nationally-recognized reputation for accuracy, timeliness, and unbiased fair treatment of the consumer and manufacturer alike.

The facilities of the Department are at all times available to supply the manufacturer with technical advice, and to safeguard him from unfair competition.

For its entire program of service and protection, the Department relies in large measure upon education, from the standpoint of both buyer and seller. However, in those rare instances when this policy is unheeded, backing by the courts, both federal and state, can be depended upon for enforcement assistance.

FACULTY

1961-1962

COLLEGE OF AGRICULTURE

Administrative Officers

GORDON M. CAIRNS, *Dean of Agriculture and Professor of Dairy Husbandry*
B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

PAUL R. POFFENBERGER, *Assistant Dean-Instruction, and Professor of Agricultural Economics*

B.S., University of Maryland, 1935; M.S., 1937; PH.D., American University, 1953.

IRVIN C. HAUT, *Director of Experiment Station and Professor and Head of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

PAUL E. NYSTROM, *Director of Extension and Professor of Agricultural Economics*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

Professors

WENDELL S. ARBUCKLE, *Professor of Dairy Manufacturing*

B.S., Purdue University, 1933; A.M., University of Missouri, 1937; PH.D., 1940.

RONALD BAMFORD, *Professor and Head of Botany*

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WILLIAM E. BICKLEY, *Professor and Head of Entomology*

B.S., University of Tennessee, 1934; M.S., 1936; PH.D., University of Maryland, 1940.

ARTHUR L. BRUECKNER, *Professor and Head of Veterinary Science*

B.S., University of Kentucky, 1914; V.M.D., University of Pennsylvania, 1924.

FRED L. BULL, *Extension Professor, Soil Conservation*

B.S., University of Maryland, 1925.

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Faculty

AMIHUD KRAMER, *Professor of Horticulture*

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ALBIN O. KUHN, *Professor of Agronomy and Executive Vice-President*

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Major, U. S. Army, Retired.

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Faculty

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- JOHN R. SCHABINGER, *Extension Associate Professor of Dairy Husbandry*
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- MARK M. SHOEMAKER, *Associate Professor of Landscape Gardening*
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Assistant Professors

- GEORGE J. ABRAMS, *Assistant Professor of Apiculture*
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- JOHN BURIC, *Assistant Professor of Animal Husbandry*
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- NERI A. CLARK, *Assistant Professor of Agronomy*
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- CHARLOTTE A. CONAWAY, *Extension Assistant Professor and Assistant State 4-H Club Agent*
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- DONALD W. DICKSON, *Assistant Professor and Publications Editor*
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- PAUL H. ENGLE, *Extension Assistant Professor of Animal Husbandry*
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- KENNETH E. FELTON, *Assistant Professor of Agricultural Engineering*
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- RAYMOND A. GALLOWAY, *Assistant Professor of Plant Physiology*
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- WESLEY L. HARRIS, *Assistant Professor in Agricultural Engineering*
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- FLOYD P. HARRISON, *Assistant Professor of Entomology*
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- ELIZABETH E. HAVILAND, *Assistant Professor of Entomology*
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Faculty

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COLLEGE
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Catalog Series 1961-1962



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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26 } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

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and

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Emeriti

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Dr. Conrad Link (Agriculture), *Chairman*

FINANCIAL AIDS AND SELF-HELP

Dr. Paul E. Nystrom (Agriculture), *Chairman*

STUDENT PUBLICATIONS AND COMMUNICATIONS

Prof. Warren Strausbaugh (Arts and Sciences), *Chairman*

RELIGIOUS LIFE

Dr. Redfield Allen (Engineering), *Chairman*

STUDENT HEALTH AND SAFETY

Dr. M. H. Eyler (Physical Education), *Chairman*

STUDENT DISCIPLINE

Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krah1 (Medicine), *Chairman*

THE COLLEGE

General Information

THE COLLEGE OF ARTS AND SCIENCES OFFERS ITS STUDENTS A LIBERAL education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit, but of genuine personal satisfaction. It also offers each student the opportunity to concentrate in the field of his choice; this element of depth serves both as an integral part of his education and as a foundation for further professional training or pursuits.

Students in other colleges of the University are offered training in fundamental courses that serve as a background for their professional education.

The courses required by the University for the baccalaureate degree in any college emphasize the development and nature of American civilization. All of these courses except one are given by the College of Arts and Sciences.

HISTORY

This college is an outgrowth of the Division of Language and Literature and the Division of Applied Science and the later School of Liberal Arts of Maryland State College. In 1921 the School of Liberal Arts and the School of Chemistry were combined and other physical and biological sciences were brought into the newly formed College of Arts and Sciences. In later reorganizations some departments have been added and some transferred to the administrative control of other colleges.

REQUIREMENTS FOR ADMISSION

The requirements for admission to the College of Arts and Sciences are, in general, the same as those for admission to the other colleges and schools of the University. Application must be made to the Director of Admissions, University of Maryland, College Park, Maryland.

The student who intends to pursue a program of study in the College of Arts and Sciences should include the following subjects in his high school program: English, 4 units; college preparatory mathematics (algebra, plane geometry), 3 or 4 units; foreign language, 2 or more units; biology, chemistry, or physics, 2 units; history and social sciences, 1 or more units.

The student who wishes to major in chemistry, mathematics, physics, botany, microbiology, zoology, or who wishes to follow a pre-medical or pre-dental program, should include 4 units of college preparatory mathematics (algebra, plane geometry, trigonometry, and more advanced mathematics, if available). He should also include chemistry and physics.

A complete statement of admission requirements and policies will be found in the publication entitled *An Adventure in Learning*. A copy may be obtained

General Information

by writing to the Office of University Relations, North Administration Building, University of Maryland, College Park, Maryland.

COSTS

Actual annual costs of attending the University include: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new registrants. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. A charge of \$300.00 is assessed students who are non-residents of the State of Maryland.

For a more detailed statement of these costs write for a copy of the publication entitled *An Adventure in Learning*.

DEGREES

The degrees conferred on students who have met the requirements prescribed by the College of Arts and Sciences are Bachelor of Arts, Bachelor of Science, and Bachelor of Music.

Students of this College who complete satisfactorily curricula with majors in departments of the humanities or social sciences are awarded the degree of Bachelor of Arts.¹ Those who complete satisfactorily curricula with majors in departments of biological or physical sciences are awarded the degree of Bachelor of Science.² Those who complete satisfactorily a special professional program in the Department of Music are awarded the degree of Bachelor of Music.

Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Medicine, or of Arts and Sciences and Dentistry, will be granted the degree of Bachelor of Science. Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Law will be granted the degree of Bachelor of Arts.

RESIDENCE

The last thirty semester hours credit of any curriculum leading to a baccalaureate degree in the College of Arts and Sciences must be taken in residence in this University.

¹The Departments of Economics, Geography, and Government and Politics, although administratively in the College of Business and Public Administration, offer courses for Arts and Sciences students. Majors may be elected in these departments as in those of the other departments of the Division of Social Sciences which are administered by the College of Arts and Sciences.

²The Department of Botany, although administered by the College of Agriculture, offers courses for Arts and Sciences students. A major may be elected in this department as in those of the other departments of the Division of Biological Sciences administered by the College of Arts and Sciences.

Students working for one of the combined degrees must earn the last 30 semester hours credit of the arts program in residence in the College of Arts and Sciences, College Park.

The complete statement of this requirement may be found in the University publication, *University General and Academic Regulations*.

FOR ADDITIONAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean
(College in which you are interested)
The University of Maryland
College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean
(School in which you are interested)
The University of Maryland
Lombard and Greene Streets
Baltimore 1, Maryland

Academic Information

GENERAL REQUIREMENTS FOR DEGREES

The baccalaureate degree from the College of Arts and Sciences may be conferred upon a student who has satisfied the following requirements:

1. University requirements.
2. College of Arts and Sciences requirements.

A minimum of 120 semester hours credit in academic subjects other than Basic Air Science is required for a bachelor's degree. Men must acquire in addition 5 semester hours in Basic Air Science, and 4 semester hours in physical activities. Women must acquire in addition 4 semester hours in hygiene and 4 semester hours in physical activities.

WORK IN THE FRESHMAN AND SOPHOMORE YEARS

The work of the first two years in the College of Arts and Sciences is designed to give the student a basic general education, and to prepare him for concentration in the latter part of his course.

It is the student's responsibility to develop in these earlier years such proficiency in basic subjects as may be necessary for his continuation in the field of his special interest. Personal aptitude and a general scholastic ability must also be demonstrated, if permission to pursue a major study is to be obtained.

The student should follow the curriculum for which he is believed to be best fitted. It will be noted that a common group of studies is required of all students who are candidates for a bachelor's degree. These subjects should be taken, if possible, during the freshman and sophomore years.

THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

Work in American civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field. The third level is for students desiring to do graduate work in this field (see catalog for the Graduate School).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American history (6 hours, H. 5, 6), and American government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two, or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours remaining an absolute requirement), 3 hours of American history (3 hours remaining as an absolute requirement), and 3 hours of American government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 56 instead of H. 5 and 6. Students who have been exempted from courses in English, American history, or American government may not take such courses for credit.

Special note for foreign students:

The foreign student is required to take a special classification test in English before registering for the required English courses. He may be required to take Foreign Language 1 and 2—English for Foreign Students—before registering for English 1.

The foreign student may meet the foreign language requirement by taking additional courses in English as stated below under the foreign language requirement.

The foreign student should register for Speech 3, *Fundamentals of General American Speech*, rather than for the speech course normally required in his curriculum.

2. For the additional hours of the 24 hours required the student elects one course from the following group (Elective Group I):

Econ. 37—Fundamentals of Economics (not open to freshmen; students who may wish to take additional courses in economics should substitute Econ. 31 for Econ. 37).

Phil. 1—Philosophy for Modern Man.

Psych. 1—Introduction to Psychology.

Soc. 1—Sociology of American Life.

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American history, or American government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused, or (b) Elective Group I (see 2 above) provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

H. 42—Western Civilization; either H. 51 or 52—The Humanities; either Music 20—Survey of Music Literature or Art 22—History of American Art; and Soc. 5—Anthropology.

AIR SCIENCE, PHYSICAL EDUCATION AND HEALTH

1. Basic Air Science for men—five semester hours. Required freshman and sophomore years.

2. Health for women—four semester hours. Required freshman year.

3. Physical Activities for men and women—four semester hours. Required freshman and sophomore years.

All male students, unless specifically exempted under University regulations, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation and it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who

have not fulfilled this requirement will complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may, with proper approval, carry as electives during their junior and senior years Advanced Air Science courses which lead to a regular or reserve commission in the United States Air Force.

For further details concerning air science refer to *University General and Academic Regulations*, a publication mailed in September and February of each year to all new undergraduate students.

COLLEGE REQUIREMENTS

1. Foreign language—twelve semester hours in one language, unless otherwise specified. The languages which may be offered to meet this requirement are French, German, Hebrew, Italian, Latin, Greek, Russian, Spanish, and Chinese.

Language conversation courses, 3, 8, or 9, are not to be taken to meet the college requirement of 12 hours of language unless the student has finished the second semester of second year French, German, Spanish, etc. (5, 7, or 17).

Foreign students may satisfy this requirement by offering twelve hours of English in addition to the regular English requirement. The special course in English for foreign students (Foreign Language 1, 2) may be included in the additional hours of English. This option may not be used by pre-medical students.

A foreign student may not meet the foreign language requirement by taking freshman or sophomore courses in his native language.

2. Natural science and mathematics—twelve semester hours, unless otherwise specified. Candidates for the A.B. degree must demonstrate eligibility to take Math. 10 or must complete satisfactorily Math. 3. The science courses elected require the approval of the Dean; they will be selected from the Departments of Botany, Chemistry, Entomology, Geology, Microbiology, Physics, Zoology. At least one course must include laboratory experience and one course must be elected in each of the Divisions of Biological and Physical Sciences except in the case of students whose science courses are specifically prescribed in their curricula.

3. Speech—two or three semester hours in accordance with the particular curriculum.

4. Major and minor requirements—When a student has completed satisfactorily the requirements of the freshman and sophomore years he will select a major in one of the departments of an upper division and for graduation will complete a departmental major and a minor. The courses constituting the major and the minor must conform to the requirements of the department in which the major work is done.

The student must have an average of not less than "C" in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above.

A minor in programs leading to the A. B. degree, shall consist of a coherent group of courses totalling 18 semester hours in addition to the requirements listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department.

No minor is required in programs leading to the B. S. degree, but the student must take such supporting courses in science or other fields as are required by his major department.

The average grade of the work taken in the major field must be at least "C;" some departments will count toward satisfaction of the major requirement no course completed with a grade of less than "C." The average grade of the work taken in the major and minor fields combined must be at least "C." A general average of "C" in courses taken at the University of Maryland is required for graduation.

JUNIOR REQUIREMENTS

A student must acquire a minimum of 56 academic semester hours with an average grade of at least "C" in the freshman and sophomore years before he will be permitted to begin advanced work on his major and minor. See *University General and Academic Regulations* for full statement of this rule.

NORMAL LOAD

The normal load for students in this college is 15 semester hours credit per semester, exclusive of the required work in physical activities, air science, and hygiene.

A student must have the approval of his adviser and dean to take more than the normal program prescribed in his curriculum.

ADVISERS

Each freshman in this college will be assigned to a faculty adviser who will help the student, during his first year, to select his courses and to determine what his field of major concentration should be.

The student at the sophomore level and above will be advised by a faculty member in his major department. Students following the three-year programs in dentistry, law, and medicine will be advised by the special advisers for these programs.

ELECTIVES IN OTHER COLLEGES AND SCHOOLS

A limited number of courses taken in other colleges and schools of the University may be counted for elective or minor credit toward a degree in the College of Arts and Sciences.

The number of credits which may be accepted from the various colleges and schools is as follows: College of Education—24; all other colleges—20. The combined credits from these colleges and schools shall not exceed 20 (or 24 if courses in education are included). Schools of Dentistry, Law, and Medicine—in combined degree programs the first year of professional work must be completed.

CERTIFICATION OF HIGH SCHOOL TEACHERS

If courses are properly chosen in the field of education, a prospective high school teacher can prepare for high school positions, with a major and minor in one of the departments of this College. A student who wishes to work for a teacher's certificate should consult his adviser before the junior year.

SPECIAL HONORS

1. A program of readings for special honors in literature is open to undergraduates in any college of the University who have the approval of their dean and of the Head of the Department of English. Candidates are examined on an approved list of literary works including translations from foreign languages. Application may be made to the Head of the Department of English at any time before the beginning of the junior year.

2. The College Independent Studies Program is administered by departmental Committees on Independent Studies and by a College Committee on Independent Studies. Admission to the program is at the beginning of the second semester of the student's junior year. Application must be made not later than four weeks before the end of the first semester of the junior year to the head of the department in which the student wishes to take honors. At the time of application for admission to the program the student must have a three-point cumulative academic average or the recommendation of the appropriate departmental committee. Successful completion of the program will be signalized by appropriate announcement on the commencement program and by citation on the student's academic record and on his diploma.

GENERAL A.B. CURRICULUM

The following curriculum gives the subjects required of students planning to major in one of the departments of the Divisions of Humanities or Social Studies. Since some departmental majors require prerequisites which should be taken during the first two years, individual programs must be prepared in consultation with the assigned adviser; the elective hours listed may be used for this purpose. Lower division advisers and the heads of the Departments of Music and Sociology have available copies of normal curricula for distribution to students who wish additional information about majors in art, music, or sociology.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature ¹	3	3
G. & P. 1—American Government or Group I elective ¹	3	..
Group I elective or G. & P. 1 ¹.....	..	3
Foreign Language ²	3	3
Mathematics or Natural Science.....	3-4	3-4
Speech 1—Public Speaking and elective.....	3	3
A. S. 1, 2—Basic Air Science (men).....	½*	2
Hea. 2, 4—Health (women).....	2	2
Physical Activities	1	1
Total	18½-19½	17-19
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6—Composition and English or World Literature ¹	3	3
H. 5, 6—History of American Civilization ¹	3	3
Foreign Language (continued).....	3	3
Natural Science or Mathematics.....	3-4	3-4
Elective	3	3-6
A. S. 3, 4—Basic Air Science (men).....	2	½
Physical Activities	1	1
Total	16-19	16½-20½

I. AMERICAN CIVILIZATION

The University has a comprehensive program in American studies. It begins with required courses on the freshman and sophomore level, includes a major for juniors and seniors, and also provides for graduate work on the M.A. and Ph.D. level. (For information concerning the graduate program, see the Graduate School Catalog.)

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹ See The Program in American Civilization on pages 4-5.

² A placement test is given during registration week for students wishing to pursue a language they have studied in high school.

The Humanities Curriculum

The student who majors in American civilization has the advantage of being taught by cooperating specialists from various departments. The committee in charge of the program represents the Departments of English, History, Government and Politics, and Sociology. Members of the committee serve as official advisers to students electing to work in the field.

The program is intended to have generous breadth, but the danger of securing breadth without depth is offset by the requirement of an area of concentration. Studies in American civilization are supplemented by studies in source cultures and interacting cultures; however, in planning a curriculum, students are required to concentrate in one of the four departments primarily concerned with the program. The program must include at least 42 semester hours of work from the departments participating in the program. These credits constitute collectively a major and a minor. At least 20 of these 42 hours of advanced work must be in 100-level courses. All the advanced work should be so distributed that the student will take at least 9 hours in each of three out of the four cooperating departments, including, of course, the department of his concentration.

In his senior year, each major student is required to take a conference course (American Civilization 137, 138) in which the study of American civilization is brought to a focus. During this course, the student analyzes eight or ten important books which reveal fundamental patterns in American life and thought and receives incidental training in bibliographical matters, in formulating problems for special investigation, and in group discussion.

Freshmen and sophomores who are interested in concentrating in American civilization should consult with their Lower Division adviser. Upperclassmen should consult with the Executive Secretary of the American Civilization curriculum, Assistant Professor Beall.

Suggested sample curriculum for American civilization majors:

Junior year: H. 52—The Humanities (3); H. 105 and 106—Social & Economic History of the United States (3, 3); Eng. 150 and 151—American Literature (3, 3); G. & P. 144—American Political Theory (3); Phil. 121—American Philosophy (3); Electives (9).

Senior year: American Civilization 137 and 138—Conference course in American Civilization (3, 3); G. & P. 174—Political Parties (3); Phil. 154—Political and Social Philosophy (3); Soc. 105—Cultural Anthropology (3); Soc. 125—Cultural History of the Negro (3); H. 133 and 134—History of Ideas in America (3, 3); Electives (6).

II. THE HUMANITIES

Art

Two types of majors are offered in art: Art Major A for those who take the art curriculum as a cultural subject and as preparation for a career for which art is a necessary background; Art Major B for those who prepare themselves for creative work on a professional basis.

In both types the student begins with the basic courses, and moves to more advanced study of the theory of design and of the general principles involved in visual expression. A large amount of study takes the form of actual practice of drawing and painting. The student, in this way, gains a knowledge of the vocabulary of drawing and painting, and of the methods and procedures underlying good quality of performance.

Art Major B emphasizes the development of craftsmanship and the creative faculty. Art Major A, while including the basic studio courses, necessarily places emphasis on general history, composition, and art appreciation, with subsequent choices of special art epochs for greater detailed study.

Art history and art appreciation are of special interest to students majoring in English, history, languages, philosophy, or music. It is suggested that they schedule Art 9, 11, and 22, History of Art, and History of American Art, as excellent supplementary study for a fuller understanding of their major. Art 20 is recommended for English, languages, philosophy, home economics, and education majors. Art 22, History of American Art, is advised for majors in the American civilization courses. Home economics and horticulture majors are encouraged to schedule basic art courses as a useful means of training observation and developing understanding of, and proficiency in, the visual arts.

Courses required in all art majors: Art 1—Charcoal Drawing (3); Art 5—Basic Design (3); Art 9, 11—History of Art (3, 3); Art 20—Art Appreciation (2).

Courses required in cultural art major: Art 22—History of American Art (3).

Courses required in creative art major: Art 7—Landscape Painting (3).

The Department of Art reserves the right to retain any work of students for the permanent collection of the University.

Classical Languages and Literatures

No placement tests are given in the Classical Languages. For details on registration for Latin and Greek, see preliminary paragraph at head of course listings below in this catalog.

MAJOR IN LATIN: Latin 1, 2, 3, and 4 or their equivalent must have been completed before a student may begin work on a major in Latin. A student majoring in Latin will then begin his concentration with Latin 5. A major consists of a minimum of twenty-four hours beginning with Latin 5, twelve hours of which must be taken in 100-level courses. A major student who has taken Latin 1, 2, 3, and 4 may use credit so obtained to fulfill the twelve-hour foreign language requirement of the College of Arts and Sciences. Those registering initially for Latin 5 must fulfill this requirement in another foreign language, preferably Greek.

Comparative Literature

Comparative literature courses are offered by the Classics, the English, and the Foreign Language Departments. When it is so recommended by the student's adviser, comparative literature courses may be counted toward a major

The Humanities Curriculum

or minor in English. Requirements for a major in comparative literature include a knowledge of one foreign language and the Introductory Survey, Comparative Literature 101 and 102.

English

Students majoring in English, particularly those who plan to do graduate work, are urged to take work in foreign language in addition to that required for graduation. In selecting minor or elective subjects, it is recommended that students give special consideration to the following: Latin, Greek, French, German, philosophy, history, and fine arts.

Students who major in English must choose 24 hours of the possible 24-40 hours required of a major from courses in several groups, as follows:

1. Three hours in language (Eng. 8, 101, 102, 104, 107).
2. Six hours in major figures (Eng. 104, 115, 116, 121).
3. Nine hours in survey or type courses (six hours from Eng. 110, 111, 112, 113, 120, 122, 123, 125, 126, 129, 130, 134, 135; three hours from Eng. 139, 140, 143, 144, 145, 157).
4. Six hours in American literature (Eng. 148, 150, 151, 155, 156).

Foreign Languages and Literatures

The underclass Department requirements which must be satisfied before a student can begin work toward a major are the courses numbered 1, 2, 4, and 5 (or 1, 2, 6 and 7, or 1, 2, 4 and 17).

Two types of majors are offered in French, German, or Spanish, one for the general student or the future teacher, and the other for those interested in a rounded study of a foreign area for the purpose of understanding another nation through its literature, history, sociology, economics, and other aspects.

LITERATURE AND LANGUAGE MAJOR: Language and literature as such are stressed in the first type of major. Specific minimum equipments beyond the first two years are a semester each of intermediate and advanced conversation (French, German, or Spanish 8 or 9 and 80 or 81), six hours of the introductory survey of literature (French, German, or Spanish 75 and 76), one semester of advanced composition (French, German, or Spanish 121), and any twelve hours in literature courses numbered 100 or above—a total of 27 semester hours. Requirements for a major in Russian comprise 2 hours of intermediate and 3 hours of advanced conversation; 3 hours of composition, Russian 71 or 72; 6 hours introduction to literature, Russian 75 and 76; plus 12 hours in 100-level courses, totaling 26 hours. Beyond this minimum further courses in the Department are desirable and as electives work in American and in comparative literature is strongly recommended; Comparative Literature 101 and 102 are required.

FOREIGN AREA MAJOR: The area study major endeavors to provide the students with a knowledge of various aspects of the country whose language

he is studying. Specific minimum requirements beyond the first two years are nine hours of conversation (French, German, or Spanish 8, 9, and 80 or 81), six hours of review grammar and composition (French, German, or Spanish 71 and 72), six hours in civilization (French, German, or Spanish 161 and 162 or 163 and 164), and six additional hours in courses numbered 100 or above—a total of 27 semester hours. In addition, Comparative Literature 101 and 102 are required. The student takes, as a minor, eighteen hours in geography, history, political science, sociology, economics, or other human science courses, distributed through these fields in consultation with advisers in the Foreign Language Department.

Music

The functions of the Department are (1) to help the general student develop sound critical judgment and discriminating taste in the art of music; (2) to provide professional training based on a foundation in the liberal arts; (3) to prepare the student for graduate work in the field; (4) to prepare him to teach in the public schools. To this end, two degrees are offered: the Bachelor of Music, with a major in theory-composition, history-literature, or applied music; and the Bachelor of Arts, with a major in music. The Bachelor of Science degree, with a major in music education, is offered in the College of Education.

Courses in music theory, literature, and applied music are open to all students who have completed the specified prerequisites or their equivalents. The University Orchestra, Band, Chapel Choir, Madrigal Singers, Women's Chorus, and Men's Glee Club are likewise open to qualified students.

THE BACHELOR OF MUSIC DEGREE: The curriculum leading to the degree of Bachelor of Music is designed for students who wish to prepare for careers as performers or private teachers, or to prepare for music teaching on the college level. The course requirements in the three major areas may be summarized as follows. A list of specific courses is available in the departmental office.

	Major in <i>Theory-Composition</i>	<i>History-Literature</i>	<i>Applied Music</i>
Academic courses			
specified ¹	42 sem. hrs.	42 sem. hrs.	42 sem. hrs.
unspecified	9	9	10
Theory and Literature			
lower division	27	23	23
upper division	16	22	13
Applied Music			

In addition, eight semester hours in ensemble courses; Air Science (men), health (women)*, and physical activities*.

¹ University requirement: American Civilization Program, 24 semester hours; College of Arts and Sciences requirements: 12 semester hours in foreign languages, and 6 semester hours in mathematics or science.

*As required in the general A.B. curriculum.

The Humanities Curriculums

THE BACHELOR OF ARTS DEGREE: The curriculum leading to the Bachelor of Arts degree with a major in music is designed for students whose interests are cultural rather than professional. The departmental requirements include sixteen semester hours in music theory, eighteen semester hours in music history and literature, eight semester hours in applied music, in addition to not more than six semester hours in the larger ensembles. A list of specific courses is available in the departmental office.

Philosophy

The Department's undergraduate courses are designed to help students attain philosophical perspective, clear understanding, and sound critical evaluation concerning the nature of man, his place in the universe, and the significance of the principal types of human experiences and activities.

Phil. 1—*Philosophy for Modern Man* is available to those students who wish to explore the field of philosophy, but who have not sufficient free electives to take some of the more specialized courses offered by the Department. Phil. 1 is a Group I elective in the American Civilization Program. As such it is directed in part toward examining the philosophical basis of American ideas and ideals. But it is concerned also with the general educational aspects of the program and hence deals with the larger philosophical questions relating to the nature of man as a thinking, feeling and valuing member of human society.

To students in other fields who wish to explore the philosophy of their subjects, the Department offers a choice among a group of specifically related courses: Phil. 52—*Philosophy in Literature*; Phil. 53—*Philosophy of Religion*; Phil. 145—*Ethics*, Phil. 147—*Philosophy of Art*; Phil. 152—*Philosophy of Social and Historical Change*; Phil. 154—*Political and Social Philosophy*; Phil. 155—*Logic*; Phil. 156—*Philosophy of Science*; Phil. 158—*Philosophy of Language*.

To students of literature, history, or the history of ideas, the Department offers historical courses in ancient, medieval, modern, recent and contemporary, Oriental, and American philosophy. The last course is particularly relevant for students of American civilization.

The courses in logic (Phil. 41 and Phil. 155) are recommended in the Arts-Law curriculum and the government and politics program.

Minors in philosophy are especially suitable for students majoring in English, literature, the social sciences, American civilization, psychology, and in the pre-ministry and pre-law fields. Interested students should consult with the Chairman of the Department.

Freshmen and sophomores planning to major in philosophy should consult the Chairman of the Department about preparation for the major.

Speech and Dramatic Art

The courses in this Department have two main functions: (1) to provide training in basic oral communication skills to meet the general needs of under-

graduates of the University; (2) to provide integrated specialized training for students who wish to major or minor in speech.

A major may be taken in the Speech Department in one of two general areas, the speech arts or the speech sciences. The speech arts include theater, radio and television, public speaking, and oral interpretation; the speech sciences include phonetics, semantics, speech pathology and audiology. The undergraduate program provides a level of training that will prepare students to enter several professional fields. Specifically, these fields are: (1) teaching speech and dramatic art or directing these activities; (2) radio and television; (3) speech and hearing therapy. In addition, adequate preparation and training for graduate work is provided.

Minors in speech are adapted to meet the needs of students majoring in English, the social sciences, journalism and public relations, elementary education, nursery school—kindergarten education, pre-law and pre-ministry fields.

Prerequisites for all majors in speech are Speech 1, 3, or 4, 5 and 6, and Zool. 1. Major requirements: 30 hours of courses in speech with 15 hours of courses numbered 100 and above, in either the speech arts or speech sciences. Speech 111, Seminar, is required of all majors in speech. No grades of "D" in the major field will be counted toward completing the major requirements for graduation.

Specific requirements for professional training in speech and hearing therapy include completion of the general requirements for speech majors with the following additions: Zool. 14, 15; Psych. 1, 5, 131; a minimum of 21 hours of speech sciences at the 100 level.

Qualified students, depending upon specialized interests, are invited to participate in the activities of the University Theater, Radio-Television Guild, and the Calvert Debate Club.

III. THE SOCIAL SCIENCES

Economics

Students registered in the College of Arts and Sciences may major in economics. During the freshman and sophomore years prospective economics majors should consult with their Lower Division adviser in Arts and Sciences concerning preparation for the major. Normally Economic Developments (2, 2) is taken during the freshman year and Principles of Economics (3, 3) during the sophomore year.

Juniors and seniors are advised by the faculty of the Department of Economics, which is administered in the College of Business and Public Administration. In addition to the ten lower division credits listed above, economics majors must complete a minimum of 26 credits with an average grade of not less than "C." National Income Analysis (3), Advanced Economic Principles (3) and Elements of Statistics (3) are required. Other courses to meet the requirements of the major are to be selected with the aid of a faculty adviser. Descriptions of courses in economics will be found in the catalog of the College of

The Social Sciences Curriculums

Business and Public Administration. Additional information about the curriculum in economics may be obtained at the departmental office.

Geography

Geography is a recognized major field in Arts and Sciences leading to the A.B. degree. Arts and Sciences students may register for its courses and major in geography from a liberal arts point of view, although the Department is administered by the College of Business and Public Administration. Freshmen and sophomores wishing to major in geography should consult their Lower Division advisers and the Department of Geography.

The following courses are required: Geog. 10 and 11 (3, 3); Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3, 3); Geog. 170 (3); Geog. 199 (3); and 15 hours in other geography courses numbered 100 to 198.

The following science courses are required: Bot. 1 (4); Chem. 1 (4); Agron. 114 (4). The following supporting courses are also required: Bot. 113 (2); Econ. 31 and 32 (3, 3); Soc. 105 (3). Certain of these courses are applicable to the minor. Please consult Senior Adviser, Department of Geography.

Government and Politics

Although this Department is administered by the College of Business and Public Administration, government and politics is a recognized major field for students in the College of Arts and Sciences, leading to the A.B. degree. Freshmen and sophomores wishing to major in government and politics should consult their Lower Division advisers about preparation for the major; additional information about the government and politics program may be obtained at the departmental office. Juniors and seniors majoring in government and politics are advised by the faculty of that Department.

For further information concerning the courses offered in government and politics, see the catalog of the College of Business and Public Administration. The government and politics curriculum described in that catalog does not apply to students in the College of Arts and Sciences. Such students must complete instead the following requirements:

1. At least 36 semester hours of government and politics.
2. No course in which the grade is less than "C", made after September 1947, may be counted as part of the major work.
3. An adequate diversification of study in the various fields of government and politics, under the guidance of the faculty of the Department.

If desired, students may specialize in state and local government, public administration, public law, public policy, political theory, comparative government, or international relations.

History

The Department of History recognizes that the study of history supplies the general student with the cultural background for the several fields of

knowledge. At the same time the curriculum provides preparation for those entering specific fields of professional activity: (1) the teaching of history and the social sciences at the secondary level, (2) journalism, (3) research and archival work, (4) the diplomatic service. In addition, the curriculum offers adequate preparation and training for those who intend to pursue graduate study.

The program of the undergraduate student majoring in history is planned to insure a diversification of courses with the aim of familiarizing the student with the subject matter and disciplines of the broad fields of history. A faculty adviser, designated by the Department, will assist each undergraduate major in planning his program and in selecting courses to meet both major and minor requirements. The student will be expected to confer at regular intervals with his faculty adviser regarding the progress of his studies.

Undergraduate history majors must meet the following departmental requirements:

1. Every major is required to complete a minimum of 27 semester hours in advanced courses; i. e., H. 51, H. 53, 54 and the series numbered from 100 to 199.

2. Prerequisites for majors are H. 5, 6 or H. 56 (a University of Maryland requirement for the bachelor's degree) and H. 1, 2.

3. Every history major is required to complete the proseminar course, H. 199, three semester hours.

4. The remaining 24 semester hours of the major work in advanced courses are distributed as follows: (a) 12 hours in American history (including Latin American and Canadian) and (b) 12 hours in European and Asian history.

5. No grades of "D" will be counted in computing the hours to satisfy the major requirement.

6. Completion of the minor.

The undergraduate major will, during his junior year, file with his faculty adviser a minor sequence. The minor requirement may be satisfied by (1) a single sequence of 18 semester hours in any one of several related departments such as government and politics, economics, sociology, philosophy, literature, and geography; or (2) a split minor sequence to include two departments, provided a minimum of 9 hours is offered in each department, a total of 18 hours. In certain cases, and only on the basis of an approved written application, the student may offer a combination social science minor sequence of at least 18 hours or a combination humanities minor sequence of at least 18 hours. In all cases the minor sequence must include at least 6 semester hours of 100-level work in a single department. The average grade in the minor must be "C" or better.

Psychology

The Department of Psychology is classed in both the Division of Social Sciences (for the B.A. degree) and the Division of Biological Sciences (for the

B.S. degree) and offers educational programs related to both of these fields. The functions of the undergraduate curriculum in psychology are to provide an organized study of the behavior of man, in terms of the biological conditions and social factors which influence such behavior. In addition, the undergraduate program in psychology is arranged to provide a level of training that will equip the students to enter certain professional pursuits which require a background in this field. It is important to note, however, that the undergraduate degree in psychology is not in itself recognized as carrying any professional status.

Departmental requirements toward the B.A. degree with a major in psychology are: Psych. 1, 21, 106, 145, 150; and two from among Psych. 128, 142, and 148; plus 9 additional hours in psychology and/or other departments selected in conference with the student's major adviser. A minor program is organized to supplement the work in the major, and for the B.A. degree this minor program will ordinarily consist of courses in the social sciences. The departmental requirements for the Bachelor of Science degree are given elsewhere in these pages. No student who has ever received a second grade lower than "C" in the major requirements listed above will be certified for graduation with a major in psychology.

Sociology

The major in sociology offers a liberal education and at the same time provides a background for those professional fields which focus on an understanding of human relationships.

Departmental requirements consist of a minimum of 30 semester hours in sociology and for the minor, a coherent group of courses totalling 18 hours. Of the latter at least 6 hours must be 100-level courses in a single department. Sociology credit with a grade of less than "C" may not be counted toward the major requirement.

Courses required of all sociology majors:—Soc. 1, 2, 183, 186, and 196.

There are several suggested areas of emphasis within the sociology major, some with additional requirements:— (1) General Sociology; (2) Anthropology, (3) Community Studies (rural, urban, and suburban groups and their populations); (4) Crime Control Curriculum (a four year preprofessional program in the field of crime and delinquency and their prevention and control); (5) Sociology-Education (fulfills requirements for secondary teaching certification); (6) Social Institutions (the structure and functioning of social institutions including the family, religion, economic, governmental, and educational); (7) Pre-professional Social Work Curriculum (provides pre-professional preparation for entering a professional social work school, and qualifications for certain social work positions for which post-graduate professional education is not required); (8) Social Psychology; (9) Industrial and Occupational Sociology. A statement of the course requirements and other recommended courses is available in the departmental office.

GENERAL B.S. CURRICULUM

The curricula required of students majoring in departments of the Divisions of Biological Sciences and Physical Sciences vary much in regard to the year in which University and College required courses are scheduled in order to assure the proper sequential and prerequisite arrangement of major courses. The following curriculum, which gives the subjects required of students who plan to major in departments of the Divisions of Biological or Physical Sciences, is, therefore, quite flexible; individual programs must be prepared in consultation with the assigned adviser. Lower division advisers and department heads have available copies of normal curricula for distribution to students who wish additional information about majors in departments of these divisions.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature ¹	3	3
G. & P. 1—American Government or Group I elective ¹	3	..
Group I elective or G. & P. 1 ¹.....	..	3
Speech 7—Public Speaking .....	..	2
Mathematics - Science	8-9	8-10
A. S. 1, 2—Basic Air Science (men).....	½*	2
Hea. 2, 4—Health (women).....	2	2
Physical Activities	1	1
	—	—
Total	17½-18½	19-20
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6—Composition and English or World Literature ¹	3	3
H. 5, 6—History of American Civilization ¹	3	3
Foreign Language ²	3	3
Mathematics - Science	9-12	9-12
A. S. 3, 4—Basic Air Science (men).....	2	½
Physical Activities	1	1
	—	—
Total	16-20	19½-22½

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹ See The Program in American Civilization on pages 4-5.

² A placement test is given during registration week for students wishing to pursue a language they have studied in high school. Some departmental curricula require German. Most of the departments prefer or require French or German.

IV. THE BIOLOGICAL SCIENCES

General Biological Sciences

This program has been prepared for the student who is interested in biology but whose interest has not yet centered in any one of the biological sciences. This program is also a suitable one for the pre-dental student who plans to earn the B.S. degree before entering dental school. This program, however is not recommended for the pre-dental student. The program includes work in botany, entomology, microbiology, and zoology, and introduces the student to the general principles and methods of each of these biological sciences. The student may then emphasize any one of these areas in completing his program.

By proper selection of courses during the junior and senior years, a student may concentrate his work sufficiently in one area of biology to be able to continue in graduate work in that field. However, a student who is definitely planning to do graduate work would be well-advised to major in one specific field of biology as soon as his interest becomes definite.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirements and Speech 7 (or Speech 1, 2) to fulfill the requirement in speech.

Required introductory courses in the biological sciences: Microb. 1; Bot. 1; Ent. 1; Zool. 1. These courses must be passed with an average grade of at least "C". The pre-dental student must take Zool. 2 as well.

Required supporting courses in mathematics and the physical sciences: Math. 10, 11; Chem. 1, 3; Phys. 10, 11. The student working in most areas of biology will also need a year of organic chemistry (Chem. 31, 32, 33, 34 or Chem. 35, 36, 37, 38). Additional work in chemistry may also be required by the student's adviser, in accordance with the needs of the student's field of emphasis. The pre-dental student must include Chem. 35, 36, 37, 38 in his program.

Advanced courses in the biological sciences: The student must complete at least 30 semester hours of advanced work selected from the fields of botany, microbiology, entomology, and zoology. Of these credits at least 18 must be at the 100 level and taken in at least two of the four departments. The following courses in psychology may be counted as part of the required 30 semester hours but may not be used to satisfy the requirement of 18 semester hours at the 100 level: Psych. 106, 136, 145, 180, 181, 195.

A junior or senior following this curriculum will be advised by the department in which he plans to do the most work.

Botany

Botany is recognized as either a major or minor field in Arts and Sciences, leading to the B.S. degree. The Botany Department is administered by the

College of Agriculture, but students register for botany courses and major or minor in this subject just as if the Department were in the College of Arts and Sciences. Course descriptions and further information about the Botany Department are given in the catalog for the College of Agriculture.

Freshmen and sophomores should consult their lower division adviser and also the Botany Department adviser, in planning the major program. The four lower division courses, General Botany—Bot. 1 and 2; Diseases of Plants—Bot. 20; and Plant Taxonomy—Bot. 11, total 14 credit hours and should be taken during the first two years. Sufficient upper division courses to give a total of 40 credit hours in botany must be taken. Included in these will be Plant Physiology—Bot. 101; Plant Microtechnique—Bot. 110; Plant Anatomy—Bot. 111; Plant Ecology—Bot. 102; and electives. The botany electives chosen depend, in part, on the student's chief interest.

To support the courses in botany, major students are required to take General Chemistry—Chem. 1 and 3; Mathematics—Math. 10 and 11 as a minimum; Physics—Phys. 10 and 11; General Zoology—Zool. 1; General Microbiology—Microb. 1; Genetics; and 12 hours of a modern language, preferably German.

Microbiology

The Department of Microbiology functions with three purposes in view. One of these is to provide fundamental training for those students who choose microbiology as a major subject. Two major fields of study are provided: (1) applied microbiology, in preparation for such positions as dairy, sanitary, or agricultural bacteriologists in federal, state, and commercial laboratories, and (2) medical microbiology, in relation to hospital, public health, and clinical laboratories. The second objective of the Department is to provide desirable courses for those students who are majoring in closely allied departments and desire vital supplementary information. Every effort has been made to plan these courses so that they satisfy the demands of these related departments as well as the needs of those students who have chosen microbiology as a major. The third purpose of the Department is to encourage and foster original thought in the pursuit of research.

MICROBIOLOGY CURRICULUM: The field of microbiology is too vast in scope to permit specialization during undergraduate study. Accordingly, the curriculum outlined below includes the basic courses in microbiology and allied fields.

A student planning a major in microbiology should consult his adviser during the first year. The supporting courses should be chosen only from the biological or physical sciences.

A grade of "D" in a course in microbiology will not be counted toward completing the major requirements for graduation.

Courses required in major and supporting courses:—Microb. 1—General Microbiology (4); Microb. 50—Cytology of Bacteria (2); Microb. 101—Pathogenic Microbiology (4); Microb. 131, 133—Applied Microbiology (4, 4); Microb. 60, 62—Microbiological Literature (1, 1), Microb. 103—Serology (4); Microb. 161—Systematic Bacteriology (2); Microb. 150—Microbial Physiology (2); Chem. 1, 3—General Chemistry (4, 4); Chem. 31, 32, 33, 34—

Elements of Organic Chemistry (3, 3); Chem. 19—Elements of Quantitative Analysis (4); Chem. 161, 163—Biochemistry (2, 2); Math. 10, 11—Algebra, Trigonometry and Analytic Geometry (3, 3); Phys. 10, 11—Fundamentals of Physics (4, 4).

MEDICAL TECHNOLOGY PROGRAM: This is a professional program intended for those students who wish to prepare for technical work in any type of a medical laboratory. Because of its technical nature, it is broader in requirements and allows fewer electives. By proper planning of one's schedule beginning in the sophomore year, courses in zoology may be taken in place of electives or certain courses in microbiology. These courses should include Zool. 1 and 2—General Zoology; Zool. 108—Animal Histology; Zool. 110—Parasitology; and the following courses in microbiology: Microb. 105—Clinical Methods, and Microb. 108—Epidemiology.

The student who elects this program should try to obtain summer employment in a medical laboratory. This program is so designed that a student, with proper planning, can prepare himself for admission to any of the training schools for medical technology located in various hospitals. These training schools require two, three or four years of collegiate work, and after one year of hospital apprenticeship, the student is eligible to take examinations for the Registry of Medical Technologists of the American Society of Clinical Pathologists (M.T.) if he so desires.

Psychology

The Department of Psychology is classed in both the Division of Biological Sciences and the Division of Social Sciences, and offers educational programs to both these fields. Further details on the undergraduate program in psychology are given elsewhere in these pages.

Departmental requirements toward the B.S. degree with a major in psychology are Psych. 1, 106, 145, 150, and Psych. 136 or 148, and Psych. 180 or 181, plus 9 additional hours in psychology and/or other departments selected in conference with the student's major adviser. A candidate for the B.S. degree with a major in psychology will offer as supporting courses at least 18 hours from among the following groups: Math. 10, 11, 18, 19, 20, 21, 130, 132; Phys. 10, 11, 60, 104, 105, 109; Zool. 1, 2, 5, 14, 15, 102, 104. The additional 12 hours that are required by the College of Arts and Sciences may be selected from this group. The departmental requirements for the Bachelor of Arts degree are given elsewhere in these pages. No student who has ever received a second grade lower than "C" in the major requirements listed above will be certified for graduation with a major in psychology.

Zoology

Two courses of study have been established as described below. At least thirty-two hours of zoology, with an average grade of "C", are required for a major in the Department. Zool. 14, 15, 55S and 181 will not be counted as part of the 32 hour major requirement.

ZOOLOGY: Copies of the suggested curricula for majors in zoology who are

interested in any phase of animal study, pre-medical training, and pre-dental training are available from advisers and from the zoology office.

Courses required for all majors in zoology are: Zool. 1, 2—General Zoology and the Animal Phyla (4, 4); Zool. 5—Comparative Vertebrate Morphology (4); and Zool. 20—Vertebrate Embryology (4).

Supporting courses must include the following: Math. 10, 11—Algebra, Trigonometry and Analytic Geometry (3, 3) or Math. 18, 19—Elementary Mathematical Analysis (5, 5); Phys. 10, 11—Fundamentals of Physics (4, 4); Chem. 1, 3—General Chemistry (4, 4); Organic Chemistry—Chem. 31, 32, 33, 34 (6) or Chem. 35, 36, 37, 38 (8); and one of the following courses: Bot. 2—second semester of General Botany (4); Chem. 19—Elements of Quantitative Analysis (4); or Math. 20, 21—Calculus (4, 4).

FISHERIES: The aquatic resources of Maryland offer an excellent opportunity for the study of fisheries and marine zoology. In addition to the courses specified for other majors in zoology, students interested in following the fisheries curriculum must take: Zool. 127—Ichthyology (4); and Zool. 130—Hydrobiology (4).

Supporting courses must include, in addition to those specified above, the following: Chem. 15—Qualitative Analysis (4); Chem. 19—Elements of Quantitative Analysis (4); German 1, 2—Elementary German (3, 3); German 6, 7—Intermediate Scientific German (3, 3).

The student in this curriculum is also required to spend part of his summers in practical work in fisheries.

V. THE PHYSICAL SCIENCES

General Physical Sciences

This program has been prepared for the student who desires an introduction to the physical sciences but whose interest has not yet centered in any one field of the physical sciences. The program includes some advanced work in chemistry, mathematics, and physics, and permits the student to emphasize one of these fields without having to meet the full requirements for a major in one specific field. The program is suitable for the pre-medical or pre-dental student who plans to complete the requirements for the B.S. degree before entering medical or dental school. This program is also suitable for the woman student who is interested in science and wishes to become a technical assistant or technical writer in one of these fields, but who does not plan to do graduate work. The program is not recommended for students who may later do graduate work in mathematics or in one of the physical sciences.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirement and Speech 7 (or Speech 1, 2) to fulfill the requirement in speech.

Required introductory courses in mathematics and the physical sciences:

Physical Sciences Curriculum

Math. 18, 19; Chem. 1, 3; Phys. 10, 11 (or 20, 21 or 15, 16). These courses must be passed with an average grade of at least "C" for the student to be eligible to continue with this program.

Required supporting courses for pre-medical or pre-dental students: The pre-dental student must include Zool. 1, 2 in his program and must include Chem. 35, 36, 37, 38 in his advanced work in this program. The pre-medical student must include Zool. 1, 2, 5, 20 in his program and must include Chem. 19, 35, 36, 37, 38 in his advanced work in this program. Students interested in technical writing should take Eng. 7, in addition to the courses in English required of all students.

Advanced courses in mathematics and the physical sciences: The student must complete at least 36 semester hours of advanced work selected from the Departments of Chemistry, Mathematics, and Physics. Of these credits at least 18 must be at the 100 level and taken in at least two of the three departments with no less than 3 in the second department. The student should normally take calculus (Math. 20, 21) inasmuch as practically all the advanced work in mathematics and physics requires calculus.

Chemistry

The science of chemistry is so broad that completion of a well-planned course of undergraduate study is necessary before specialization. The curriculum outlined below describes such a course of study. The sequence of courses given should be followed as closely as possible; it is realized, however, that some deviation from this sequence may be necessary toward the end of the program. All of the courses in chemistry listed, unless otherwise designated, are required of students majoring in chemistry.

FIRST YEAR: Chem. 1, 3—General Chemistry (4, 4); Math. 18, 19—Elementary Mathematical Analysis (5, 5); Speech 7—Public Speaking (2). SECOND YEAR: Chem. 15—Qualitative Analysis (4); Chem. 21—Quantitative Analysis (4); Chem. 35, 37—Elementary Organic Chemistry (2, 2); Chem. 36, 38—Elementary Organic Laboratory (2, 2); Math. 20, 21—Calculus (4, 4); German 1, 2—Elementary German (3, 3). THIRD YEAR: Chem. 123—Quantitative Analysis (4); Chem. 141, 143—Advanced Organic Chemistry (2, 2); Chem. 144—Advanced Organic Laboratory (2); Phys. 20, 21—General Physics (5, 5); German 6, 7—Intermediate Scientific German (3, 3); Electives (1-2, 2-3). FOURTH YEAR: Chem. 101—Advanced Inorganic Chemistry (2); Chem. 187, 189—Physical Chemistry (3, 3); Chem. 188, 190—Physical Chemistry Laboratory (2, 2); Chem. 146—The Identification of Organic Compounds (2); Electives (5-8, 5-8); (Eng. 7 is strongly recommended.)

Mathematics

This curriculum offers training in the fundamentals of mathematics in preparation for teaching, industrial work, or graduate work in mathematics.

No grade of "D" in the major field will be counted toward completion of

the requirements for graduation in the mathematics curriculum. An average grade of "C" is required in the supporting courses.

The mathematics curriculum offers two options depending on the choice of electives in the junior and senior years.

PURE MATHEMATICS OPTION: Electives in mathematics must include three hours in each of the fields of algebra and geometry.

APPLIED MATHEMATICS OPTION: Electives in mathematics must include six hours in the fields of algebra and geometry, and at least six hours in the field of applied mathematics. Supporting courses will be selected from the physical sciences or engineering in consultation with the Head of the Department of Mathematics.

COURSES REQUIRED IN MAJOR: Math. 18, 19—Elementary Mathematical Analysis (5, 5); Math. 20, 21—Calculus (4, 4); Math. 110, 111—Advanced Calculus (4, 4); Math. 114—Differential Equations (3); and not less than 15 credit hours of electives in mathematics. Supporting courses include Phys. 20, 21—General Physics (5, 5) and an approved program of at least 12 additional hours outside the Department, including at least 6 hours at the 100 level; these courses may be in the physical sciences or in another area chosen by the student. The foreign language requirement should be satisfied by either German or French.

Physics

The physics curriculum is designed for students who desire training in the fundamentals of physics in preparation for graduate work or teaching, or for positions in governmental and industrial laboratories. Students who enter the University intending to major in physics are urged to take during the first two years the introductory courses Phys. 15, 16, 17, 18, and two semesters of Phys. 60. However, students who enter physics after taking one of the other elementary physics courses (either Phys. 10, 11 or Phys. 20, 21) can reach approximately the same level by taking Phys. 50, 51, Phys. 102, and two semesters of Phys. 60. All students should accompany these basic courses with Math. 18, 19—Elementary Mathematical Analysis (5, 5); and Math. 20, 21—Calculus (4, 4).

After completion of the courses mentioned above, the following courses are specifically required as a part of the physics major: Phys. 52—Heat (3); Phys. 104, 105—Electricity and Magnetism (3, 3); Phys. 118—Introduction to Modern Physics (3); Phys. 119—Modern Physics (3); and at least four credits of advanced laboratory courses (e.g., Phys. 100, 110, 140, 141, 150, or 190). Supporting courses must include at least one additional three credit mathematics course approved by the physics adviser.

Students who wish to be recommended for graduate work in physics must maintain a "B" average and should also include as many as possible of the following courses: Phys. 106—Theoretical Mechanics (3); Phys. 116—Fundamental Hydrodynamics (3); Phys. 120—Nuclear Physics (4); Phys. 122—Prop-

erties of Matter (4); Phys. 140, 141—Atomic and Nuclear Physics Laboratory (3, 3); and Math. 110, 111—Advanced Calculus (4, 4). Recommended course programs are available from the Physics Department. Students may major in physics only if a grade of "C" is attained in each semester of the elementary physics courses and in each of the required mathematics courses.

HONORS IN PHYSICS

Any students who complete Math. 21 and at least 12 credits in physics by the end of the sophomore year and who have maintained a 3.0 cumulative average in the total academic program as well as in physics and in mathematics may apply for admission to the Independent Studies Program in physics. This program involves some independent work in addition to the normal physics major program and also requires the completion of the comprehensive examination in physics during the second semester of the senior year. Candidates for departmental honors in physics are selected from participants in the Independent Studies Program. For further details, interested physics majors should consult their advisers.

VI. PRE-PROFESSIONAL CURRICULUMS

COMBINED PROGRAM IN ARTS AND SCIENCES AND LAW

Some law schools will consider only those applicants who have completed a four-year college program leading to the A.B. or B.S. degree. Other law schools, including the School of Law of the University of Maryland, will accept applicants who have successfully completed a three-year program of academic work. Law schools do not prescribe the specific courses which the student should take in his pre-law work, but do require that the student follow one of the standard programs offered by the undergraduate college.

FOUR-YEAR PROGRAM: The student who plans to complete the requirements for the A.B. or B.S. degree before entering law school should select one of the major fields for concentration. Pre-law students most commonly select one of the following subjects as their major: American civilization, economics, English, government and politics, history, philosophy, psychology, sociology, speech. During his first two years, the pre-law student will normally follow the General A.B. Curriculum described earlier in these pages. During his junior and senior year, the pre-law student will complete the major and minor requirements for the A.B. degree. The requirements in the various major fields are described elsewhere in this catalog.

THREE-YEAR PROGRAM: The student who plans to enter law school at the end of his third year should follow the General A.B. Curriculum during his first two years. During his junior year he will complete the requirements for a minor (18 semester hours) in one of the fields of concentration. He will also be able to take some additional courses as electives. His program for the first three years must include all of the basic courses required for a degree from the College of Arts and Sciences and a minor of 18 semester hours as approved by his pre-law adviser. He must earn a total of 92 academic semes-

ter hours, exclusive of the credits in air science (men), health (women), and physical education required of all undergraduate students.

COMBINED DEGREE IN ARTS AND SCIENCES AND LAW: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Law of the University of Maryland will be eligible for the Bachelor of Arts degree after the successful completion of one year of full-time courses in the School of Law in Baltimore (or the equivalent in semester hours of work in the Evening Division of the School of Law). The completion of a year's work in the Law School constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in air science (men), health (women), and physical activities. The student must earn at least a "C" average in all of his work at College Park, and at least a "C" average in 28 semester hours of work in the School of Law. A student who enters the combined program with advanced standing must complete the final 30 academic semester hours of pre-law work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Arts by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Law.

The course of study at the School of Law requires three years of full-time work for completion. Students who successfully complete the program are awarded the degree of Bachelor of Laws.

COMBINED PROGRAM IN ARTS AND SCIENCES AND DENTISTRY

Candidates for admission to dental schools should normally plan to take at least a three-year undergraduate program. Although the School of Dentistry of the University of Maryland considers some applications from students with only two years of undergraduate preparation, it requires three years of the great majority of its candidates and expects these candidates to meet the full requirements of the combined degree in Arts and Sciences and Dentistry as described below.

Certain science courses are prescribed for all candidates for dental school: Zool. 1, 2; Chem. 1, 3, 35, 36, 37, 38; Math. 10, 11 (or 18, 19); Phys. 10, 11, or 20, 21). These courses must be included in any pre-dental program. The student who wishes to be a candidate at the end of his second year must complete all of these courses during the first two years. All requirements must be completed by June of the year in which the student expects to enter dental school.

Neither successful completion of a pre-dental program nor of degree requirements guarantees admission to a dental school. All dental schools, including that of the University of Maryland, have their own admission requirements and procedures. Dental schools expect candidates to attain an academic average substantially higher than the minimum average required for graduation from college. Through its pre-dental advisers and its Committee on the Evaluation of Pre-Dental Students this College attempts to assist its applicants with their problems.

Pre-Professional Curriculum

FOUR-YEAR PROGRAM: The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. Pre-dental students following the four-year program most commonly select one of the following subjects as their major field: microbiology, general biological sciences, general physical sciences, psychology, zoology. These programs are described elsewhere in this catalog. However, a student may meet dental school requirements in most of the majors offered in the College of Arts and Sciences, provided that he includes in his program the science courses specifically prescribed by dental schools. The student's pre-dental adviser will assist the student in planning a program which will meet both the dental school requirements and also the requirements for the A.B. or B.S. degree.

THREE-YEAR PROGRAM: The student electing to follow this program must complete all the courses specially required by the dental school. He must earn a total of 90 academic semester hours in addition to the credits in air science (men), health (women), and physical activities required of all undergraduate students. He must complete supporting courses as approved by his pre-dental adviser. He must follow very carefully the program as outlined below:

Freshman year: Eng. 1, 2; Zool. 1, 2; Chem. 1, 3; Math. 10, 11; air science (men); Health 2, 4 (women); physical activities.

Sophomore year: Eng. 3, 4 or 5, 6; Group I Electives; G. & P. 1; Chem. 35, 36, 37, 38, H. 5, 6; foreign language (French or German or Latin); air science (men); physical activities.

Note: Students planning to apply for admission to dental school at the end of the second year must take Phys. 10, 11, in place of H. 5, 6. The student who takes the two-year program will not be eligible for the Bachelor of Science degree.

Junior year: Phys. 10, 11; foreign languages (continued); Speech 7; supporting courses as approved by a pre-dental adviser; electives.

Supporting courses for the Arts-Dentistry degree may be selected from the following combinations: zoology, 6 hrs. above 100; microbiology, 8 hrs. above 100; Chem. 19 plus 3 hours above 100 in any science; Chem. 161, 162, 163, and 164; or 9 hours above 100 in any one department in the arts, humanities or social sciences.

Any student who begins the three-year program may change to a four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior year.

COMBINED DEGREE IN ARTS AND SCIENCES AND DENTISTRY: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Dentistry of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Dentistry. The completion of a year's work in the School of Dentistry constitutes the student's major. The

combined program must include at least 120 academic semester hours, exclusive of required work in air science (men), health (women), and physical activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-dental work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Dentistry.

The course of study at the School of Dentistry requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Dental Surgery.

COMBINED PROGRAM IN ARTS AND SCIENCES AND MEDICINE

The student planning to request admission to a medical school must pursue a course of study which meets the requirements prescribed by the Council of Medical Education of the American Medical Association and those added or recommended by the particular medical school of his choice.

Some medical schools will consider only those applicants who will have completed a four-year college program and will have earned the A.B. or B.S. degree at the time of entrance into medical school. Other medical schools will consider applicants who will have completed three years of college work. The School of Medicine of the University of Maryland accepts some candidates who will have completed only three years of college work but looks with more favor upon the four-year program for most students. Both the four-year program and the three-year program are described below. In both programs all required science courses must be completed by June of the year in which the student expects to enter medical school.

Neither successful completion of a pre-medical program nor of degree requirements guarantees admission to any medical school. All medical schools, including that of the University of Maryland, have their own admission requirements and procedures. Medical schools expect candidates to have attained an academic average substantially higher than the minimum average required for graduation from college. Through its Committee on the Evaluation of Pre-Medical Students this College attempts to assist its applicants with their problems.

FOUR-YEAR PROGRAM: The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. In addition to meeting all general degree requirements and the specific requirements of the major selected, the pre-medical student must include in his program the following required pre-medical courses: Zool. 1, 2, 5, 20; Chem. 1, 3, 19, 35, 36, 37, 38; Math. 10, 11 (or 18, 19); Phys. 10, 11 (or 20, 21).

Pre-medical students, following the four-year program, most commonly select one of the following subjects as their major field: microbiology, general physical sciences, psychology, zoology. These programs are described elsewhere in this catalog. However, a student may meet medical school requirements in most

Pre-Professional Curriculums

of the majors offered in the College of Arts and Sciences, provided that he includes in his program the individual courses specifically prescribed by medical schools. The student's pre-medical adviser will assist the student in planning a program which will meet both the medical school requirements and also the requirements for the A.B. or B.S. degree.

THREE-YEAR PROGRAM: The student electing to follow this program must complete all of the courses specifically required by the medical school. He must earn a total of 90 academic semester hours in addition to the credits in air science (men), health (women), and physical activities required of all undergraduate students. He must follow very carefully the program as outlined in the following paragraphs.

Freshman year: Eng. 1, 2; G. & P. 1; Group I Elective; Math. 10, 11; Chem. 1, 3; Zool. 1, 2; air science (men), health 2, 4 (women); physical activities.

Sophomore year: Eng. 3, 4 or 5, 6; Chem. 35, 36, 37, 38; Zool. 5, 20; foreign language (French or German or Latin); air science (men); physical activities.

Junior year; H. 5, 6; foreign language (continued); Chem. 19, Phys. 10, 11; Sp. 7; Psych. 1; minor courses as approved by the pre-medical adviser.

Any student who begins the three-year program may change to the four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior years. The majority of students would therefore be wise to plan a four-year program on entrance and not attempt the highly concentrated three-year program.

COMBINED DEGREE IN ARTS AND SCIENCES AND MEDICINE: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Medicine of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Medicine. The completion of a year's work in the School of Medicine constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of the required work in air science (men), health (women), and physical activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-medical work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Medicine.

The course of study at the School of Medicine requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Medicine.

COURSE OFFERINGS

AMERICAN CIVILIZATION

Committee on American Civilization: ASSISTANT PROFESSOR BEALL, *Executive Secretary.*

Professors: LAND, HOFFSOMMER, MURPHY AND PLISCHKE.

Amer. Civ. 137, 138. Conference Course in American Civilization. (3, 3)

First and second semesters. Four American classics (drawn from fields of the Departments of English, Government and Politics, History, and Sociology, which cooperate in the program) are studied each semester. Specialists from the appropriate departments lecture on these books. For the first semester of this academic year the classics are: Franklin's *Autobiography*, *The Life and Writings of Thomas Jefferson*, De Tocqueville's *Democracy in America*, and Schlesinger's *The Age of Jackson*; for the second semester, Thoreau's *Walden*, Howells' *Rise of Silas Lapham*, Veblen's *Theory of the Leisure Class*, and Warner's *Democracy in Jonesville*. Through these books and the lectures on them, the student's acquaintance with American culture is brought to a focus.

This course is required for seniors majoring in the American Civilization Program. The course also counts as major credit in any of the four cooperating departments; a student may take either or both semesters.

The student majoring in American civilization can obtain his other courses principally from the offerings of the Departments of English, History, Government and Politics, and Sociology. (Bode, Beall and cooperating specialists.)

For Graduates

Amer. Civ. 201, 202. Seminar in American Civilization. (3, 3)

First and second semesters.

ART

Professor and Head: WHARTON.

Associate Professors: SIEGLER, LEMBACH AND MARIL.

Assistant Professors: GRUBAR AND STITES.

Instructors: JAMIESON AND FREENY.

Art. 1. Basic Drawing (Charcoal). (3)

Three two-hour laboratory periods per week. Drawing from casts, preparatory to life and portrait drawing and painting. Stress is placed on fundamental principles, such as the study of relative proportions, values, and modeling, etc. (Sieglar, Jamieson.)

Art 2. Basic Drawing (Charcoal). (3)

Three two-hour laboratory periods per week. Drawing from model, (head and figure) with emphasis on structure and movement. (Sieglar, Jamieson.)

Art 3. Rendering. (2)

Two two-hour laboratory periods per week. Methods of rendering architectural, interior, and landscape architectural drawings. Included are: techniques of monotone wash and water color. (Stites.)

Art 5. Basic Design. (3)

One lecture hour and five laboratory hours per week. A basic course in design for beginners consisting of the theory and practice of design. Theory of design deals with

design elements such as line, shape, form, etc., and design principles such as contrast, balance, rhythm, etc. Design practice consists of working with pencil, pen, water color, casein, and other painting media in terms of organization, representation and space. (Freeny.)

Art 6. Still Life. (3)

One lecture hour and five laboratory hours per week. Prerequisite, Art 5. A continuation of Art 5 with emphasis on more advanced still life painting problems with different media. (Jamieson.)

Art 7, 8. Landscape Painting. (3, 3)

Three two-hour laboratory periods per week. Drawing and painting; organization of landscape material with emphasis on compositional structure. (Maril.)

Art 9. History of Art. (3)

A survey of the cultures from prehistoric times to the Renaissance, as expressed through painting, sculpture, and architecture. (Stites.)

Art 10. History of American Art. (1)

A resume of the development of painting, sculpture and architecture in this country. (Grubar.)

Art 11. History of Art. (3)

Designed to continue the survey begun in Art 9. The course is concerned with the development of painting, sculpture, and architecture from the Renaissance to the present day. (Grubar, Stites.)

Art 13, 14. Elementary Sculpture. (2, 2)

Two two-hour laboratory periods per week. Study of three-dimensional compositions in round and bas-relief. Mediums used: clay, plasteline, plaster, wood, stone. (Maril.)

Art 15. Fundamentals of Art. (3)

Two three hour laboratory periods per week. This course emphasizes the fundamental principles of the creative, visual arts for those wishing to teach. It includes elements and principles of design, perspective, and theory of color. Studio practice is given in the use and application of different media. (Lembach.)

Art 20. Art Appreciation. (2)

An introduction to the technical and aesthetic problems of the artist. The student becomes acquainted with the elements that go into a work of the visual arts. He is made aware of the underlying structure that results in the "wholeness" of an art work. He will see examples (original and reproductions) of masterpieces of art. (Lembach.)

Art 22. History of American Art. (3)

This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. The development of painting, sculpture and architecture in America from the colonial period to the present. (Grubar, Stites.)

Art 100. Art Appreciation. (2)

This course enables students to develop a basis for understanding works of art. It investigates the forms and backgrounds of painting, sculpture and architecture. (Grubar.)

Art 102, 103. Creative Painting. (3, 3)

Three two-hour laboratory periods per week. Prerequisites, Art 1, 5, and 7. Assign-

ments of pictorial composition aimed at both mural decoration and easel picture problems. The formal values in painting are integrated with the student's own desire for personal expression. (Maril.)

Art 104, 105. Life Class (Drawing and Painting, Intermediate). (3, 3)

Three two-hour laboratory periods per week. Prerequisites, Art 1 and 5. Careful observation and study of the human figure for construction, action, form, line, and color. (Sieglar.)

Art 106, 107. Portrait Class (Drawing and Painting). (3, 3)

One lecture hour and five laboratory hours per week. Prerequisites, Art 1 and 5. Thorough draftsmanship and study of characterization and design stressed. (Wharton.)

Art 108, 109. Modern Art. (3, 3)

A survey of the developments in various schools of modern art. Works of art analyzed according to their intrinsic values and in their historical background. Collections of Washington and Baltimore are utilized. (Grubar.)

Art 113, 114. Illustration. (3, 3)

Two three-hour laboratory periods per week. Prerequisites, Art 1, 5, 104. This course is designed for the purpose of channeling fine art training into practical fields, thereby preparing the student to meet the modern commercial advertising problems. Special emphasis will be placed upon magazine and book illustrating. (Jamieson.)

Art 115, 116. Still Life Painting (Advanced). (3, 3)

Two three-hour laboratory periods per week. Prerequisite, Art 6. This course is for those who have completed Art 6 and wish to specialize in Still Life Painting, and more creative work. (Wharton.)

Art 154, 155. Life Drawing and Painting (Advanced). (3, 3)

Three two-hour laboratory periods per week. Prerequisite, Art 105. This course is for those who have completed Art 105 and wish to develop greater proficiency in the use of the figure in creative work. (Jamieson.)

Art 156, 157. Portrait Painting (Advanced). (3, 3)

Two three-hour laboratory periods per week. Prerequisite, Art 106, 107. This course is for those who have completed Art 106, 107 and wish to specialize in portraiture. (Wharton.)

Art 185, 186. Renaissance and Baroque Art in Italy. (2, 2)

Prerequisite, Art 11. The first term is concerned with the emergence and development of Renaissance painting, sculpture, and architecture through the first quarter of the 16th century. In the second term Mannerism and the Baroque phases are studied. (Grubar, Stites.)

Art 188, 189. History of 16th and 17th Century Painting. (2, 2)

Prerequisite, Art 11. A study of the development of painting and related arts. The first semester study will center on Italian painting in the 16th and 17th century and the emergence of the Baroque style. During the second semester, the paintings of France, Spain, England, and the Low Countries will be considered. (Grubar.)

Art 190, 191. Special Problems in Art. (2 or 3, 2 or 3)

Two three-hour laboratory periods per week or its equivalent in art history and appreciation. Permission of Department Head. Designed to offer the advanced art student special instruction in areas not offered regularly by the Department. (Staff.)

BOTANY

Students in the College of Arts and Sciences may select botany as a major field, and may also take courses in this Department for elective credits. For a description of courses, see the catalog of the College of Agriculture.

CHEMISTRY

Laboratory fees in chemistry are \$10.00 per laboratory course per semester except for Chemistry 214, for which the fee is \$20.00.

Professor and Head: WHITE.

Professors: LIPPINCOTT, PRATT, REEVE, ROLLINSON, SVIRBELY, VEITCH AND WOODS.

Research Professor: BAILEY.

Associate Professors: JAQUITH, PICKARD, PURDY AND STUNTZ.

Assistant Professors: BOYD, CARRUTHERS, GORDON, GRIM, HENERY-LOGAN, KASLER AND LAKSHMANAN.

ANALYTICAL CHEMISTRY

Chem. 15. Qualitative Analysis. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. (Jaquith.)

Chem. 19. Elements of Quantitative Analysis. (4)

First and second semesters. Summer session. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. An introduction to the basic theory and techniques of volumetric and gravimetric analysis. Primarily for students in engineering, agriculture, pre-medical, and pre-dental curricula. (Purdy.)

Chem. 21. Quantitative Analysis. (4)

Second semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 15. An intensive study of the theory and techniques of inorganic quantitative analysis, covering primarily volumetric methods. Required of all students majoring in chemistry. (Stuntz.)

Chem. 123. Quantitative Analysis. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 21. A continuation of Chem. 21, including volumetric, gravimetric, electrometric, and colorimetric methods. Required of all students majoring in chemistry. (Stuntz.)

Chem. 125. Instrumental Analysis. (4)

Second semester. Two lectures and six hours of laboratory per week. Prerequisites, Chem. 189, 190 or concurrent registration therein. A study of the application of physicochemical methods to analytical chemistry. Techniques such as polarography, potentiometry, conductivity and spectrophotometry will be included. (Purdy.)

Chem. 166, 167. Food Analysis. (3, 3)

First and second semesters. One lecture and two three-hour laboratory periods per week. Prerequisite Chem. 33.

Chem. 206, 208. Spectrographic Analysis. (1, 1)

One three-hour laboratory period per week. Registration limited. Prerequisites, Chem. 190 and consent of the instructor. (White.)

Chem. 221, 223. Chemical Microscopy. (2, 2)

First and second semesters. One lecture and one three-hour laboratory period per week. Registration limited. Prerequisite, consent of instructor. Chem. 221 is a prerequisite for Chem. 223. A study of the use of the microscope in chemistry. Chem. 223 is devoted to study of the optical properties of crystals. (Stuntz.)

Chem. 225. Advanced Instrumental Analysis. (4)

Second semester. Two lectures and six hours of laboratory per week. Prerequisites, Chem. 189, 190 or concurrent registration therein. An intensive study of physico-chemical methods as applied to analytical chemistry. Laboratory work will include experiments in such fields as polarography, coulometry and amperometry, potentiometry and spectrophotometry, nephelometry. (Purdy.)

Chem. 226. Advanced Quantitative Analysis. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisites, Chem. 125, 225, or consent of instructor. A study of advanced methods with emphasis on the modern techniques of analytical chemistry. (Purdy.)

Chem. 266. Biological Analysis. (2)

Second semester. Two three-hour laboratory periods per week. Prerequisites, Chem. 19, 33. A study of analytical methods applied to biological material.

BIOCHEMISTRY

Chem. 81. General Biochemistry. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisites, Chem. 33, or Chem. 37, 38. This course is designed primarily for students in home economics. (Henery-Logan.)

Chem. 161, 163. Biochemistry. (2, 2)

First and second semesters. Two lectures per week. Prerequisite, Chem. 33, or Chem. 37. This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course in biochemistry than Chem. 81. (Veitch.)

Chem. 162, 164. Biochemistry Laboratory. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, Chem. 34, or Chem. 38. (Veitch.)

Chem. 261, 263. Advanced Biochemistry. (2, 2)

First and second semesters. Two lectures per week. Prerequisite, Chem. 143, or consent of instructor. (Veitch.)

Chem. 262, 264. Advanced Biochemistry Laboratory. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Veitch.)

Chem. 265. Enzymes. (2)

First semester. Two lectures per week. Prerequisite, Chem. 163. (Veitch.)

Chem. 268. Special Problems in Biochemistry. (2-4)

First and second semesters. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 161, 162 and consent of instructor. (Veitch.)

Chemistry

INORGANIC AND GENERAL CHEMISTRY

Chem. 1, 3. General Chemistry. (4, 4)

First and second semesters. *Chem. 3*, summer session. Two lectures, one quiz, and two two-hour laboratory periods per week. Prerequisite, 1 year high school algebra or equivalent. (Staff.)

Chem. 11, 13. General Chemistry. (3, 3)

Two lectures and one three-hour laboratory period per week. An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing. (Rollinson.)

Chem. 101. Advanced Inorganic Chemistry. (2)

Second semester. Two lectures per week. Prerequisites, *Chem. 37, 123*.

Chem. 102. Inorganic Preparations. (2)

Second semester. Two three-hour laboratory periods per week. Prerequisite, *Chem. 123*. (Boyd.)

Chem. 111. Chemical Principles. (4)

Two lectures and two three-hour laboratory periods a week. Prerequisite, *Chem. 3*, or equivalent. Not open to students seeking a major in the physical sciences, since the course content is covered elsewhere in their curricula. A course in the principles of chemistry with accompanying laboratory work consisting of simple quantitative experiments. (Credit applicable only toward degree in College of Education.) (Jaquith.)

One or more courses of the group 201-214 will be offered each semester depending on demand.

Chem. 201, 203. The Chemistry of the Rarer Elements. (2, 2)

First and second semesters. Two lectures per week. (Gordon, White.)

Chem. 202, 204. Advanced Inorganic Laboratory. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. (Boyd.)

Chem. 205. Radiochemistry. (2)

Two lectures per week. (Rollinson.)

Chem. 207. Chemistry of Coordination Compounds. (2)

Two lectures per week. (Rollinson.)

Chem. 209. Non-Aqueous Inorganic Solvents. (2)

First or second semester. Two lectures per week. (Jaquith.)

Chem. 210. Radiochemistry Laboratory. (1-2)

One or two four-hour laboratory periods per week. Registration limited. Prerequisites, *Chem. 205* (or concurrent registration therein), and consent of instructor. (Lakshmanan.)

Chem. 211. Selected Topics in Inorganic Chemistry. (2)

First or second semester. Two lectures a week. Prerequisite, *Chem. 201, 203* or equivalent. An examination of some current topics in modern inorganic chemistry. (Boyd.)

Chem. 213. Advanced Radiochemistry. (2)

Second semester. Two lectures per week. Prerequisite, Chem. 205 or consent of instructor. Utilization of radioisotopes with special emphasis on applications to problems in the life sciences. (Lakshmanan.)

Chem. 214. Advanced Radiochemistry Laboratory. (1 or 2)

Second semester. One or two four-hour laboratory periods per week. Prerequisites, Chem. 210 and Chem. 213 (or concurrent registration in Chem. 213) and consent of instructor. Registration limited. Laboratory training in utilization of radioisotopes with special emphasis on applications to problems in life sciences. (Lakshmanan.)

ORGANIC CHEMISTRY

Chem. 31, 33. Elements of Organic Chemistry. (3, 3)

First and second semesters. Two lectures and one three-hour laboratory period per week. Prerequisite, Chem. 3. Organic chemistry for students in agriculture, bacteriology, and home economics. (Reeve.)

Chem. 35, 37. Elementary Organic Chemistry. (2, 2)

First and second semesters. Chem. 37, summer session. Two lectures per week. Prerequisite, Chem. 3. A course for chemists, chemical engineers, pre-medical students, and pre-dental students. (Woods.)

Chem. 36, 38. Elementary Organic Laboratory. (2, 2)

First and second semesters. Chem. 38, summer session. Two three-hour laboratory periods per week. Prerequisites, Chem. 35, 37, or concurrent registration therein. (Woods.)

Chem. 115. A Survey of Organic Chemistry. (4)

Summer school only. Open ONLY to registrants in the National Science Foundation Summer Institute. Five one-hour lectures per week; five three-hour laboratory periods per week. A systematic survey of compounds of carbon at the elementary level.

Chem. 141, 143. Advanced Organic Chemistry. (2, 2)

First and second semesters. Two lectures per week. Prerequisites, Chem. 37, 38. An advanced study of the compounds of carbon. (Reeve.)

Chem. 144. Advanced Organic Laboratory. (2-4)

First and second semesters. Summer session. Two or four three-hour laboratory periods per week. Prerequisites, Chem. 37, 38. (Pratt.)

Chem. 146, 148. The Identification of Organic Compounds. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisites, Chem. 141, 143, or concurrent registration therein. The systematic identification of organic compounds. (Pratt.)

Chem. 150. Organic Quantitative Analysis. (2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of the instructor. The semi-micro determination of carbon, hydrogen, nitrogen, halogen and certain functional groups. (Kasler.)

One or more courses from the following group, 240-251, will customarily be offered each semester.

Chemistry

Chem. 240. Organic Chemistry of High Polymers. (2)

An advanced course covering the synthesis of monomers, mechanisms of polymerization, and the correlation between structure and properties in high polymers. (Bailey.)

Chem. 241. Stereochemistry. (2)

Two lectures per week.

(Woods.)

Chem. 245. The Chemistry of the Steroids. (2)

Two lectures per week.

(Pratt.)

Chem. 249. Physical Aspects of Organic Chemistry. (2)

Two lectures per week.

(Woods.)

Chem. 251. The Heterocyclics. (2)

Two lectures per week.

(Pratt.)

Chem. 254. Advanced Organic Preparations. (2-4)

First and second semesters. Two or four three-hour laboratory periods per week. per week.

(Pratt.)

Chem. 258. The Identification of Organic Compounds, an Advanced Course. (2-4)

First and second semesters. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 141, 143 or concurrent registration therein.

(Pratt.)

PHYSICAL CHEMISTRY

Chem. 187, 189. Physical Chemistry. (3, 3)

First and second semesters. Three lectures per week. Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor. A course primarily for chemists and chemical engineers. This course must be accompanied by Chem. 188, 190.

(Svirbely.)

Chem. 188, 190. Physical Chemistry Laboratory. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. A laboratory course for students taking Chem. 187, 189.

(Pickard.)

Chem. 192, 194. Glassblowing Laboratory. (1, 1)

First and second semesters. Summer session. One three-hour laboratory period per week. Prerequisite, consent of instructor.

(Carruthers.)

The common prerequisites for the following courses are Chem. 187 and 189, or their equivalent. One or more courses of the group, 281 through 323, will be offered each semester depending on demand.

Chem. 281. Theory of Solutions. (2)

First or second semester. Two lectures per week. Prerequisite, Chem. 307, or equivalent.

(Svirbely.)

Chem. 285. Colloid Chemistry. (2)

Two lectures per week.

(Pickard.)

Chem. 287. Infra-red and Raman Spectroscopy. (2)

Two lectures per week. Prerequisite, consent of instructor.

(Lippincott.)

Chem. 295. Heterogeneous Equilibria. (2)

Two lectures per week.

(Pickard.)

Chemistry, Classical Languages and Literatures

- Chem. 299. Reaction Kinetics.* (3)
Three lectures per week. (Svirbely.)
- Chem. 303. Electrochemistry.* (3)
Three lectures per week. (Pickard.)
- Chem. 304. Electrochemistry Laboratory.* (2)
Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Svirbely.)
- Chem. 307. Chemical Thermodynamics.* (3)
Three lectures per week. (Pickard.)
- Chem. 311. Physicochemical Calculations.* (2)
Two lectures per week. (Pickard.)
- Chem. 313. Molecular Structure.* (3)
Three lectures per week.
- Chem. 317. Chemical Crystallography.* (3)
Three lectures per week. Prerequisite, consent of instructor. A detailed treatment of single crystal x-ray methods.
- Chem. 319, 321. Quantum Chemistry.* (3, 2)
Three lectures a week first semester. Two lectures a week second semester. (Lippincott, Mason.)
- Chem. 323. Statistical Mechanics and Chemistry.* (3)
Three lectures per week. Prerequisite, Chem. 307, or equivalent.
- SEMINAR AND RESEARCH
- Chem. 351. Seminar.* (1)
First and second semesters. (Staff.)
- Chem. 399. Research.*
First and second semesters. Summer session. (Staff.)

CLASSICAL LANGUAGES AND LITERATURES

Professor and Head: AVERY.

Assistant Professor: HUBBE.

No placement tests are given in the Classical Languages. The following schedule will apply in general in determining the course level at which students will register for Latin and Greek. All students whose stage of achievement is not represented below are urgently invited to confer with the Head of the Department.

Students offering 0 or 1 unit of Latin will register for course 1.

Students offering 2 units of Latin will register for course 3.

Students offering 3 units of Latin will register for course 4.

Students offering 4 units of Latin will register for course 5.

Classical Languages and Literatures

No credit will be given for less than two semesters of Elementary Latin or Greek except as provided below in the course description of Latin 1, 2.

LATIN

Latin 1, 2. Elementary Latin. (3, 3)

First and second semesters. The essentials of Latin grammar, exercises in translation, composition, and connected reading. A student who has had two units of Latin in high school may register for Latin 1 for purposes of review, but not for credit; however, he may, under certain conditions, register for Latin 2 for credit with departmental permission. (Hubbe.)

Latin 3. Intermediate Latin. (3)

First and second semesters. Prerequisite, Latin 1, 2 or equivalent. Grammar review, Latin readings, and exercises in composition, followed by the reading of selections from Caesar's *Commentaries on the Gallic War*. (Hubbe.)

Latin 4. Intermediate Latin. (3)

First and second semesters. Prerequisite, Latin 3 or equivalent. Selected orations of Cicero. (Avery.)

Latin 5. Vergil's Aeneid. (3)

First and second semesters. Prerequisite, Latin 4 or equivalent. Selections from Vergil's *Aeneid*. (Avery.)

Latin 51. Horace. (3)

Second semester. Prerequisite, Latin 5 or equivalent. Selected *Odes* and *Epodes* of Horace. (Avery.)

Latin 52. Livy. (3)

First semester. Prerequisite, Latin 51 or equivalent. Selections from Livy's history. (Avery.)

Latin 61. Pliny's Letters. (3)

Second semester. Prerequisite, Latin 52 or equivalent. Selected letters of Pliny the Younger. (Avery.)

Latin 70. Greek and Roman Mythology. (3)

Second semester. Taught in English, no prerequisite. A systematic study of the divinities of ancient Greece and Rome and the classical myths concerning them. This course is particularly recommended for students planning to major in Foreign Languages, English, History, the Fine Arts, and Journalism. (Avery.)

For Advanced Undergraduates and Graduates

Prerequisite for 100 level courses, Latin 61.

Latin 101. Catullus and the Roman Elegiac Poets. (3)

Lectures and readings on Catullus as a writer of lyric, an imitator of the Alexandrians, and as a writer of elegy, and on Tibullus, Propertius, and Ovid as elegists. The reading of selected poems of the four authors. Reports. (Avery.)

Latin 102. Tacitus. (3)

Lectures and readings on Greek and Roman historiography before Tacitus and on the author as a writer of history. The reading of selections from the *Annals* and *Histories*. Reports. (Avery.)

Latin 103. Roman Satire. (3)

Lectures and readings on the origins and development of Roman satire. The reading of selections from the satires of Horace, Petronius' *Cena Trimalchionis*, and the satires of Juvenal. Reports. (Avery.)

Latin 104. Roman Comedy. (3)

Lectures and readings on the origins and development of Roman comedy. The reading of selected plays of Plautus and Terence. Reports. (Avery.)

Latin 105. Lucretius. (3)

Lectures and readings on Greek and Roman Epicureanism. The reading of selections from the *De rerum natura*. Reports. (Avery.)

Latin 111. Advanced Latin Grammar. (3)

Prerequisite, three years of college Latin or equivalent. An intensive study of the morphology and syntax of the Latin language supplemented by rapid reading. (Avery.)

For Graduates

Latin 210. Vulgar Latin Readings. (3)

Summer session. Prerequisite, consent of instructor. An intensive review of the phonology, morphology, and syntax of Classical Latin, followed by the study of the deviations of Vulgar Latin from the classical norms, with the reading of illustrative texts. The reading of selections from the *Peregrinatio ad loca sancta* and the study of divergences from classical usage therein, with special emphasis on those which anticipate subsequent developments in the Romance Languages. Reports. (Avery.)

GREEK

Greek 1, 2. Elementary Greek. (3, 3)

First and second semesters. The essentials of Greek grammar, exercises in translation, composition and connected reading. (Hubbe.)

Greek 3. Intermediate Greek. (3)

First semester. Prerequisite, Greek 1, 2 or equivalent. Grammar review, Greek readings, and exercises in composition, followed by the reading of selections from the *Anabasis* of Xenophon. (Hubbe.)

Greek 4. Intermediate Greek. (3)

Second semester. Prerequisite, Greek 3 or equivalent. Selections from the Homeric epics. See Greek 6. (Hubbe.)

Greek 5. Herodotus. (3)

First semester. Prerequisite, Greek 4 or equivalent. Selections from Herodotus' history of the Persian Wars. (Hubbe.)

Greek 6. The New Testament. (3)

Second semester. Prerequisite, Greek 3 or equivalent. Greek 6 will be substituted for Greek 4 upon demand of a sufficient number of students. The study of New Testament Greek and its deviations from Classical Greek. The reading of selections from the four Gospels. (Hubbe.)

Greek 51. Euripides. (3)

Second semester. Prerequisite, Greek 5 or equivalent. Selected plays of Euripides. (Hubbe.)

Classical Languages and Literatures, Comparative Literature

Greek 52. Plato. (3)

First semester. Prerequisite, Greek 51 or equivalent. Selected dialogues of Plato. (Avery.)

COMPARATIVE LITERATURE

Professors: ALDRIDGE, FALLS, GOODWYN, HARMAN, MC MANAWAY (P.T.), MURPHY, PRAHL, ZEEVELD AND ZUCKER.

Associate Professors: COOLEY, GRAVELY, MANNING, PARSONS AND WEBER.

Assistant Professor: ANDREWS.

Requirements for major include Comparative Literature 101, 102. Comparative literature courses may be counted toward a major or minor in English when recommended by the student's major adviser.

Comp. Lit. 1. Greek Poetry. (2)

First semester. Homer's *Iliad* and *Odyssey*, with special emphasis on the literary form and the historical and mythological background.

Comp. Lit. 2. Later European Epic Poetry. (2)

Second semester. Virgil's *Aeneid*, Dante's *Divine Comedy*, *Nibelungenlied* and other European epics, with special emphasis on their relationship to and comparison with the Greek epic.

For Advanced Undergraduates and Graduates

Comp. Lit. 101, 102. Introductory Survey of Comparative Literature. (3, 3)

First semester. Survey of the background of Europe's literature through study of Greek and Latin literature in English translations, discussing the debt of modern literature to the ancients. Second semester: Study of medieval and modern continental literature. (Zucker.)

Comp. Lit. 103. The Old Testament as Literature. (3)

Second semester. A study of the sources, development and literary types. (Zucker.)

Comp. Lit. 105. Romanticism in France. (3)

First semester. Lectures and readings in the French romantic writers from Rousseau to Baudelaire. Texts are read in English translations. (Parsons.)

Comp. Lit. 106. Romanticism in Germany. (3)

Second semester. Continuation of Comp. Lit. 105. German literature from Buerger to Heine in English translations. (Prah.)

Comp. Lit. 107. The Faust Legend in English and German Literature. (3)

First semester. A study of the Faust legend of the Middle Ages and its later treatment by Marlowe in *Dr. Faustus* and by Goethe in *Faust*. (Prah.)

Comp. Lit. 112. Ibsen. (3)

First semester. A study of the life and chief work of Henrik Ibsen with special emphasis on his influence on the modern drama. (Zucker.)

Comparative Literature, Economics, English Language and Literature

Comp. Lit. 114. The Greek Drama. (3)

First semester. The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations. Emphasis on the historic background, on dramatic structure, and on the effect of the Attic drama upon the mind of the civilized world. (Prah.)

Comp. Lit. 125. Literature of the Middle Ages. (3)

Narrative, dramatic, and lyric literature of the Middle Ages studied in translation. (Cooley.)

In addition, the following courses will count as credit in comparative literature.

Classical Languages and Literatures

Latin 70.

English Language and Literature

Eng. 104; Eng. 113; Eng. 121; Eng. 129, 130; Eng. 144; Eng. 145; Eng. 155, 156; Eng. 157.

Foreign Language and Literatures

Spanish 109.

Speech and Dramatic Art

Speech 131, 132.

For Graduates

Comp. Lit. 258. Folklore in Literature. (3)

A study of folk heroes, motifs, and ideas as they appear in the world's masterpieces. (Goodwyn.)

Comp. Lit. 301. Seminar in Themes and Types. (3)

Second semester. Prerequisite, one year's work in literature and the knowledge of one language other than English. Intensive study of fundamental motifs and trends in western literature. (Aldridge.)

The following courses will count as credit in comparative literature:

English Language and Literature

Eng. 201; Eng. 204; Eng. 206, 207; Eng. 216, 217; Eng. 227, 228.

Foreign Languages and Literatures

German 204.

ECONOMICS

Students in the College of Arts and Sciences may select economics as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

ENGLISH LANGUAGE AND LITERATURE

Professor and Head: MURPHY.

Professors: ALDRIDGE, BODE, HARMAN, MC MANAWAY (P.T.) AND ZEEVELD.

English Language and Literature

Associate Professors: BALL, COOLEY, GRAVELY, JERMAN, MANNING, MISH, WARD AND WEBER.

Visiting Associate Professor: HOVEY.

Assistant Professors: ANDREWS, BARNES, BEALL, BROWN, COULTER, FLEMING, LUTWACK, MARTIN, MYERS, PORTZ, SCHAUMANN, SMITH, THORBERG AND WALKER.

Instructors: BECKMAN, BIRDSALL, CLENDENIN, CLUBB, COHEN (P.T.), COOPER, DEMAREE, DUNN, GOCHBERG, GOLDBERG (P.T.), HAN, HARE, HERMAN, JELLEMA, LETZRING (P.T.), MCMILLAN (P.T.), MERKEL (P.T.), MONCADA, NELSON, ROGERS, RYAN, E. SIMPSON, STAHR, STEVENSON, STONE, THOMAS (P.T.), WALT, WEAVER AND WHITNEY.

Graduate Assistants: AUGBURN, BRILL, CHAMBERS, CUSHMAN, DACHSLAGER, DE CATUR, FANNING, GELLIS, HEEMAN, HOGLUND, HUNTRESS, HOWARD, HUSFELT, KARR, KEEFER, JONES, LASHER, LEMAY, MILLS, MOREINES, NASCIEMENTO, NEVIN, NIGRO, ROULSTON, SCHAP, SEIGEL, H. SIMPSON, STARTT, TORPEY AND WHALEY.

Eng. 1, 2. Composition and American Literature. (3, 3)

First and second semesters. Summer session. Required of freshmen. Eng. 1 is the prerequisite of Eng. 2. See Eng. 21. Grammar, rhetoric, and the mechanics of writing; frequent themes. Readings are in American literature. (Barnes, Staff.)

Eng. 3, 4. Composition and World Literature. (3, 3)

First and second semesters. Summer session. Prerequisite, Eng. 2 or 21. Eng. 3, 4, or Eng. 5, 6, or an acceptable combination of the two, are required of sophomores. Credit will not be given for more than six hours of work in 3, 4 and 5, 6. Practice in composition. An introduction to world literature, foreign classics being read in translation. (Cooley, Staff.)

Eng. 5, 6. Composition and English Literature. (3, 3)

First and second semesters. Prerequisite, Eng. 2 or 21. Eng. 3, 4, or Eng. 5, 6, or an acceptable combination of the two, are required of sophomores. Credit will not be given for more than six hours of work in 3, 4 and 5, 6. Practice in composition. An introduction to major English writers. (Cooley, Staff.)

Eng. 7. Technical Writing. (2)

Second semester. Prerequisite, Eng. 2 or 21. For students desiring practice in writing reports, technical essays, or popular essays on technical subjects. (Coulter, Walt.)

Eng. 8. College Grammar. (3)

First and second semesters. Prerequisite, Eng. 2 or 21. An analytical study of modern English grammar. (Harman.)

Eng. 9. Introduction to Narrative Literature. (3)

Second semester. Prerequisite, Eng. 2 or 21. An intensive study of representative stories, with lectures on the history and technique of the short story and other narrative forms. (Harman.)

Eng. 12. Introduction to Creative Writing. (3)

Second semester. Prerequisite, Eng. 2 or 21. (Portz.)

Eng. 14. Expository Writing. (3)

Not offered on College Park campus. Prerequisite, Eng. 2 or 21. Credit will not be given for Eng. 7 in addition to Eng. 14. Methods and problems of exposition; practice in several kinds of informative writing including the preparation of technical papers and reports.

Eng. 15. Readings in Biography. (3)

First semester. Prerequisite, Eng. 2 or 21. An analytical study in the form and technique of biographical writing in Europe and America. (Ward.)

Eng. 21. Advanced Freshman Composition and Literature. (3)

First and second semesters. Replaces the Eng. 1 and 2 requirement for students exempt from Eng. 1. Includes a survey of fundamentals covered in Eng. 1 in addition to material comparable to that of Eng. 2. (Thorberg, Staff.)

For Advanced Undergraduates and Graduates

Eng. 4 or 6 and junior standing are prerequisite to courses numbered 101 to 199.

Eng. 101. History of the English Language. (3)

Second semester. (Harman.)

Eng. 102. Old English. (3)

First semester. (Ball.)

Eng. 104. Chaucer. (3)

First semester. The Canterbury Tales, Troilus and Criseyde, and the principal minor poems. (Harman.)

Eng. 107. American English. (3)

Second semester. The English language as developed in the United States. Dialects, vocabulary, past and present problems of usage. (Ball.)

Eng. 110, 111. Elizabethan and Jacobean Drama. (3, 3)

(Not offered 1961-62.) (Zeeveld, Mish.)

Eng. 112. Poetry of the Renaissance. (3)

First semester. (Zeeveld.)

Eng. 113. Prose of the Renaissance. (3)

Second semester. (Zeeveld, Mish.)

Eng. 115, 116. Shakespeare. (3, 3)

First and second semesters. Twenty-one important plays. (Zeeveld.)

Eng. 120. English Drama from 1660 to 1800. (3)

Second semester. The important dramatists from Wycherley to Sheridan, with emphasis upon the comedy of manners. (Ward.)

Eng. 121. Milton. (3)

Second semester. (Murphy.)

English Language and Literature

Eng. 122. *Literature of the Seventeenth Century, 1600-1660.* (3)

First semester. The major non-dramatic writers (exclusive of Milton).

(Murphy.)

Eng. 123. *Literature of the Seventeenth Century, 1660-1700.* (3)

Second semester. The Age of Dryden, with the exception of the drama.

(Aldridge.)

Eng. 125, 126. *Literature of the Eighteenth Century.* (3, 3)

First and second semesters.

(Aldridge.)

Eng. 129, 130. *Literature of the Romantic Period.* (3, 3)

First and second semesters.

(Weber.)

Eng. 134, 135. *Literature of the Victorian Period.* (3, 3)

First and second semesters.

(Jerman, Cooley.)

Eng. 139, 140. *The English Novel.* (3, 3)

First and second semesters.

(Ward, Jerman.)

Eng. 143. *Modern Poetry.* (3)

First semester. The chief British and American poets of the twentieth century.

(Fleming.)

Eng. 144. *Modern Drama.* (3)

First semester. The drama from Ibsen to the present.

(Weber.)

Eng. 145. *The Modern Novel.* (3)

Second semester. Major English and American novelists of the twentieth century.

(Andrews.)

Eng. 148. *The Literature of American Democracy.* (3)

Second semester.

(Barnes.)

Eng. 150, 151. *American Literature.* (3, 3)

First and second semesters. Representative American poetry and prose from colonial times to the present with special emphasis on the literature of the nineteenth century.

(Manning, Gravely, Beall, Lutwack.)

Eng. 155, 156. *Major American Writers.* (3, 3)

First and second semesters. Two writers studied intensively each semester.

(Gravely, Manning, Portz.)

Eng. 157. *Introduction to Folklore.* (3)

First semester. Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore.

(Cooley.)

Eng. 160. *Advanced Expository Writing.* (3)

Second semester. Theories of composition; editing; style manuals. Practice in writing essays, critical papers, reports.

(Barnes, Myers.)

Eng. 170. *Creative Writing.* (3)

First semester.

(Fleming.)

Eng. 171. *Advanced Creative Writing.* (3)

Second semester. Prerequisite, permission of the instructor.

(Fleming.)

Eng. 172. Playwriting. (3)

Second semester. Prerequisite, permission of the instructor. (Fleming.)

Eng. 199. Honors Conference Course. (3)

Second semester. Open only to seniors. Prerequisite, candidacy for honors in English. A topic will be studied in selected literary works of various periods and types. Readings; discussions; conferences; preparation of a term paper. (Cooley.)

For Graduates

Eng. 201. Bibliography and Methods. (3)

First semester. An introduction to the principles and methods of research. (Mish.)

Eng. 202. Middle English. (3)

First semester. (Harman.)

Eng. 203. Gothic. (3)

(Not offered 1961-62.) (Harman.)

Eng. 204. Seminar in Medieval Literature. (3)

Second semester. (Cooley.)

Eng. 206, 207. Seminar in Renaissance Literature. (3, 3)

First and second semesters. (McManaway, Zeeveld.)

Eng. 210. Seminar in Seventeenth-Century Literature. (3)

Second semester. (Mish.)

Eng. 212, 213. Seminar in Eighteenth-Century Literature. (3, 3)

(Not offered 1961-62.) (Aldridge.)

Eng. 214, 215. Seminar in Nineteenth-Century Literature. (3)

First and second semesters. (Jerman, Weber.)

Eng. 216, 217. Literary Criticism. (3, 3)

First and second semesters. (Lutwack.)

Eng. 225, 226. Seminar in American Literature. (3, 3)

First and second semesters. (Bode.)

Eng. 227, 228. Problems in American Literature. (3, 3)

First and second semesters. (Aldridge.)

Eng. 241, 242. Studies in Twentieth-Century Literature. (3, 3)

First and second semesters. (Hovey.)

Eng. 399. Thesis Research. (1-6)

Arranged. (Staff.)

FOREIGN LANGUAGES AND LITERATURES

Professor and Head: ZUCKER.

Professors: FALLS, GOODWYN, PRAHL AND SMITH.

Foreign Languages and Literatures

Associate Professors: BINGHAM, DOBERT, KRAMER (EMERITUS), PARSONS, QUINN, RAND, ROSENFELD AND SCHWEIZER.

Assistant Professors: ALTER, ANDERSON, BRIDGERS, BULATKIN, HALL, HERING, HITCHCOCK, MENDELOFF, NEMES, NORTON, ROVNER AND SCHRADIEK.

Instructors: ALLEN, CARROZZA (P.T.), BOBORYKINE, CHEN, GREENBERG (P.T.), PANICO AND ROSWELL.

At the beginning of each semester a placement examination is given for all students who have had some foreign language in high school and wish to do further work in that language. By this means the Department assigns each student to the suitable level of instruction. Any student who fails to qualify for the second semester of his language will be required to register for the first without credit or register for a different language. (Students who wish to continue Latin should consult the section on classical languages elsewhere in these pages).

No credit will be given for the elementary first semester (1) alone unless followed by further study.

Language conversation courses, 3, 8, or 9, are not to be taken to meet the college requirement of 12 hours of language unless the student has finished the second semester of second year French, German, Spanish, etc. (5, 7, or 17). Taking conversation courses to meet the college requirement is permitted in the case of students who enter language courses with advanced standing.

A student whose native language is taught at the University may not meet the language requirement by taking freshman or sophomore courses in his language.

HONORS IN FRENCH, GERMAN OR SPANISH: A student whose major is in French, German or Spanish and who maintains an approved average in his grades may read for honors in French, German or Spanish. A candidate for honors is examined upon an approved individual program of readings in an area of his special interest. Application may be made to the Head of the Department of Foreign Languages between the second semester of the sophomore year and the first semester of the senior year.

Attention is called to the courses in comparative literature elsewhere in these pages.

Foreign Language 1, 2. English for Foreign Students. (3, 3)

First and second semesters. An introduction to English usage, adapted to the needs of the non-English-speaking student. Pronunciation, spelling, syntax; the differences between English and various other languages are stressed. (Bridgers.)

Foreign Language 140. Oral Practice in Modern Foreign Languages. (French, German, Russian, or Spanish). (3)

Development of fluency in modern foreign languages, stress on correct sentence structure and idiomatic expression. Especially designed for teachers, or for practice in speaking the language. (Rovner.)

Attention is called to Ed. 142 and 143.

FRENCH

French 0. Intensive Elementary French. (0)

First and second semesters. Summer session. Intensive elementary course in the French language designed particularly for graduate students who wish to acquire a reading knowledge. (Hall.)

French 1, 2. Elementary French. (3, 3)

First and second semesters. French 2, summer session. Three recitations and one laboratory period per week. A student who has had two units of French in high school may take French 1 for purposes of review, but not for credit. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. (Falls, Staff.)

French 3. Elementary Conversation. (1)

First and second semesters. Open to all students who have completed their first year French or French 1 with the grade "A" or "B". (Alter.)

French 4, 5. Intermediate Literary French. (3, 3)

First and second semesters. Summer session. Prerequisite, French 2 or equivalent. Students who have taken French 6 and 7 cannot receive credit for French 4 and 5. Reading of texts designed to give some knowledge of French life, thought and culture. (Falls, Staff.)

French 6, 7. Intermediate Scientific French. (3, 3)

First and second semesters. Prerequisite, French 2 or equivalent. Students who have taken French 4 and 5 cannot receive credit for French 6 and 7. Reading of technical and scientific prose with some grammar review. (Bingham, Staff.)

French 8, 9. Intermediate Conversation. (3, 3)

First and second semesters. Prerequisite: for French 8, French 3 or consent of instructor; for French 9, French 8 or consent of instructor. (Alter.)

French 17. Grammar Review. (3)

First and second semesters. May be taken after completion of French 4 or 5. Recommended for students who expect to major or minor in French. (Hall.)

For Advanced Undergraduates

French 51, 52. The Development of the French Novel. (3, 3)

First and second semesters. (Not offered 1961-62.) Introductory study of the history and growth of the novel in French literature. French 51 covers the seventeenth and eighteenth centuries. French 52 the nineteenth. (Rosenfield.)

French 53, 54. The Development of the French Drama. (3, 3)

First and second semesters. Introductory study of the French drama. French 53 covers the seventeenth and eighteenth centuries, French 54 the nineteenth. (Rosenfield.)

French 55, 56. The Development of the Short Story in French. (3, 3)

First and second semesters. A study of the short story in French literature. French 55 covers examples up to the nineteenth century, French 56 the nineteenth and twentieth centuries. (Rosenfield.)

Foreign Languages and Literatures

French 61, 62. French Phonetics. (1, 1)

First and second semesters. Prerequisite, French 2 or equivalent. Elements of French phonetics, diction and intonation. (Hall.)

French 71, 72. Review Grammar and Composition. (3, 3)

First and second semesters. Prerequisite, French 17 or equivalent. For students who having a good knowledge of French, wish to become more proficient in the written and spoken language. (Quynn, Bingham.)

French 75, 76. Introduction to French Literature. (3, 3)

First and second semesters. Prerequisite, second year French or equivalent. An elementary survey of the chief authors and movements in French literature. (Falls, Hall.)

French 80, 81. Advanced Conversation. (3, 3)

First and second semesters. For students who wish to develop fluency and confidence in speaking the language. (Alter.)

For Advanced Undergraduates and Graduates

French 100. French Literature of the Sixteenth Century. (3)

First semester. (Not offered 1961-62.) The Renaissance in France; humanism; Rabelais and Calvin; the Pleiade; Montaigne. (Falls.)

French 101, 102. French Literature of the Seventeenth Century. (3, 3)

First and second semesters. (Not offered 1961-62.) First semester: Descartes, Pascal, Corneille, Racine. Second semester: the remaining great classical writers, with special attention to Moliere. (Quynn, Rosenfield.)

French 103, 104. French Literature of the Eighteenth Century. (3, 3)

First and second semesters. First semester: development of the philosophical and scientific movement; Montesquieu. Second semester: Voltaire, Diderot, Rousseau. (Falls, Bingham.)

French 105, 106. French Literature of the Nineteenth Century. (3, 3)

First and second semesters. First semester: drama and poetry from Romanticism to Symbolism. Second semester: the major prose writers of the same period. (Bingham, Quynn.)

French 107, 108. French Literature of the Twentieth Century. (3, 3)

First and second semesters. (Not offered 1961-62.) First semester: drama and poetry from Symbolism to the present time. Second semester: the contemporary novel. (Falls.)

French 121, 122. Advanced Composition. (3, 3)

First and second semesters. Translation from English into French, free composition, letter writing. (Falls.)

French 161, 162. French Civilization. (3, 3)

First and second semesters. (Not offered 1961-62.) French life, customs, culture, traditions. First semester: the historical development. Second semester: present-day France. (Rosenfield, Bingham.)

French 171. Practical French Phonetics. (3)

First semester. Pronunciation of modern French. The sounds and their production, the stress group, intonation. (Smith.)

French 199. Rapid Review of the History of French Literature. (1)

Second semester. Especially designed for French majors. Weekly lectures stressing the high points in the history of French literature. (Falls.)

For Graduates

The requirements of students will determine which courses will be offered.

French 207, 208. The French Novel in the First Half of the Nineteenth Century. (2, 2)

First and second semesters. (Falls.)

French 209, 210. The French Novel in the Second Half of the Nineteenth Century. (2, 2)

First and second semesters. (Not offered 1961-62.) (Falls.)

French 211. French Linguistics. (3)

First semester. (Not offered 1961-62.) (Smith, Bulatkin.)

French 212. Old French Readings. (3)

Second semester. (Smith, Bulatkin.)

French 215, 216. Moliere. (3, 3)

First and second semesters. (Quynn.)

French 221, 222. Reading Course. (Arranged)

Designed to give the graduate student a background of a survey of French literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

French 230. Introduction to European Linguistics. (3)

(Not offered 1961-62.) (Smith, Bulatkin.)

French 251, 252. Seminar. (3, 3)

Required of all graduate majors in French. (Staff.)

French 399. Research.

Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

GERMAN

German 0. Intensive Elementary German. (0)

First and second semesters. Summer session. Intensive elementary course in the German language designed particularly for graduate students who wish to acquire a reading knowledge. (Anderson, Hering.)

German 1, 2. Elementary German. (3, 3)

First and second semesters. German 2, summer session. Three recitations and one laboratory period per week. A student who has had two units of German in high school may take German 1 for purposes of review, but not for credit. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. (Dobert, Staff.)

Foreign Languages and Literatures

German 3. Elementary Conversation. (1)

First and second semesters. Open to all students who have completed their first year German or German 1 with the grade "A" or "B". (Staff.)

German 4, 5. Intermediate Literary German. (3, 3)

First and second semesters. Summer session. Prerequisite, German 2 or equivalent. Students who have taken German 6 and 7 cannot receive credit for German 4 and 5. Reading of narrative prose designed to give some knowledge of German life, thought and culture. (Dobert, Staff.)

German 6, 7. Intermediate Scientific German. (3, 3)

First and second semesters. Prerequisite, German 2 or equivalent. Students who have taken German 4 and 5 cannot receive credit for German 6 and 7. Reading of technical and scientific prose, with some grammar review. (Hering, Staff.)

German 8, 9. Intermediate Conversation. (3, 3)

First and second semesters. Prerequisite: for German 8, German 3 or consent of instructor; for German 9, German 8 or consent of instructor. (Anderson.)

German 17. Grammar Review. (3)

First and second semesters. May be taken after completion of German 4 or 5. Recommended for students who wish to major or minor in German. (Anderson.)

For Advanced Undergraduates

German 61, 62. German Phonetics. (1, 1)

First and second semesters. Prerequisite, German 2 or equivalent. Pronunciation of German, study of phonetics, oral exercises and ear training. (Schweizer.)

German 71, 72. Review Grammar and Composition. (3, 3)

First and second semesters. Prerequisite, German 4, 5, or equivalent. This course is required of students preparing to teach German. A thorough study of the more detailed points of German grammar with ample practice in composition work.

German 75, 76. Introduction to German Literature. (3, 3)

First and second semesters. Prerequisite, German 4, 5, or equivalent. An elementary survey of the chief authors and movements in German literature. (Schweizer, Dobert.)

German 80, 81. Advanced Conversation. (3, 3)

First and second semesters. Prerequisite, German 8, 9 or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Dobert.)

For Advanced Undergraduates and Graduates

German 101, 102. German Literature of the Eighteenth Century. (3, 3)

First and second semesters. The main works of Klopstock, Wieland, Lessing, Herder, Goethe, Schiller. (Prah, Schweizer.)

German 103, 104. German Literature of the Nineteenth Century. (3, 3)

First and second semesters. Outstanding works of Kleist, Grillparzer, Grabbe, Hebbel, Ludwig, Stifter, Keller, Anzengruber. (Prah, Schweizer.)

Foreign Languages and Literatures

German 105, 106. Modern German Literature. (3, 3)

First and second semesters. (Not offered 1961-62.) Prose and dramatic writings from Gerhart Hauptmann to the present time (1890-1950.) (Prah, Dobert.)

German 107, 108. Goethe's Faust. (2, 2)

First and second semesters. (Not offered 1961-62.) First and second parts of the drama. (Hering.)

German 121, 122. Advanced Composition. (3, 3)

First and second semesters. Translation from English into German, free composition, letter writing. (Dobert.)

German 161, 162. German Civilization. (3, 3)

First and second semesters. A survey of two thousand years of German history, outlining the cultural heritage of the German people, their great men, tradition, customs, art and literature, with special emphasis on the interrelationship of social and literary history. (Prah.)

German 199. Rapid Review of the History of German Literature. (1)

Second semester. Especially designed for German majors. (Schweizer.)

Attention is called to Comparative Literature 106, Romanticism in Germany, and Comparative Literature 107, The Faust Legend in English and German Literature.

For Graduates

The requirements of students will determine which courses will be offered.

German 202, 203. The Modern German Drama. (3, 3)

First and second semesters. (Not offered 1961-62.) (Zucker.)

German 204. Schiller. (3)

(Prah.)

German 205. Goethe's Works Outside of Faust. (2)

(Not offered 1961-62.) (Zucker.)

German 206. The Romantic Movement. (3)

(Prah.)

German 221, 222. Reading Course. (Arranged)

Designed to give the graduate student a background of a survey of German literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

German 230. Introduction to European Linguistics. (3)

(Not offered 1961-62.) (Smith, Bulatkin.)

German 231. Middle High German. (3)

(Schweizer.)

German 251, 252. Seminar. (3, 3)

Required of all graduate majors in German. (Staff.)

German 399. Research.

Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

Foreign Languages and Literatures

SPANISH

Spanish 1, 2. Elementary Spanish. (3, 3)

First and second semesters. Spanish 2, summer session. Three recitations and one laboratory period per week. A student who has had two units of Spanish in high school may take Spanish 1 for purposes of review, but not for credit. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. (Parsons, Staff.)

Spanish 3. Elementary Conversation. (1)

First and second semesters. Open to all students who have completed their first year Spanish or Spanish 1 with the grade "A" or "B". (Nemes.)

Spanish 4, 5. Intermediate Spanish. (3, 3)

First and second semesters. Summer session. Prerequisite, Spanish 2 or equivalent. Reading of texts designed to give some knowledge of Spanish and Latin-American life, thought and culture. (Parsons, Staff.)

Spanish 8, 9. Intermediate Conversation. (3, 3)

First and second semesters. Prerequisite: for Spanish 8, Spanish 3 or consent of instructor; for Spanish 9, Spanish 8 or consent of instructor. (Nemes.)

Spanish 17. Grammar Review. (3)

First and second semesters. May be taken after completion of Spanish 4 or 5. Recommended for students who expect to major or minor in Spanish. (Rovner, Norton.)

For Advanced Undergraduates

Spanish 51, 52. Business Spanish. (3, 3)

First and second semesters. Prerequisite, second year Spanish or equivalent. Designed to give a knowledge of correct Spanish usage; commercial letters. (Bingham.)

Spanish 61, 62. Spanish Phonetics. (1, 1)

First and second semesters. Prerequisite, Spanish 2 or equivalent. The pronunciation of Spanish, study of phonetics, oral exercises, and ear training. (Goodwyn.)

Spanish 71, 72. Review Grammar and Composition. (3, 3)

First and second semesters. Prerequisite, Spanish 4, 5 or equivalent. Intended to give an intensive and practical drill in Spanish composition. (Parsons, Rand.)

Spanish 75, 76. Introduction to Spanish Literature. (3, 3)

First and second semesters. Prerequisite, Spanish 4, 5, or equivalent. An elementary survey of the history of Spanish literature. (Parsons, Rand.)

Spanish 80, 81. Advanced Conversation. (3, 3)

First and second semesters. Prerequisite, Spanish 8, 9, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Nemes.)

For Advanced Undergraduates and Graduates

Spanish 101. Epic and Ballad. (3)

First semester. The legendary and heroic matter of Spain. Readings of the *Poema del Cid* and of ballads of various cycles. (Parsons.)

Spanish 102. The Spanish Popular Ballad. (3)

Second semester. Typical ballads composed and developed in the Spanish-speaking world during and since the Golden Age, with stress on the folkloristic point of view. (Goodwyn.)

Spanish 104. The Drama of the Golden Age. (3)

First semester. Selected plays of Lope de Vega, Calderon de la Barca, Tirso de Molina and others. (Parsons.)

Spanish 107. Cervantes: Plays and Exemplary Novels. (3)

First semester. (Rand.)

Spanish 108. Lope de Vega. (3)

First semester. (Not offered 1961-62.) Selected works of Lope de Vega. (Parsons.)

Spanish 109. Cervantes: Don Quixote. (3)

Second semester. (Not offered 1961-62.) (Goodwyn.)

Spanish 110. Modern Spanish Poetry. (3)

First semester. (Not offered 1961-62.) Significant poems of the nineteenth and twentieth centuries. (Rand.)

Spanish 111. The Spanish Novel of the Nineteenth Century. (3)

First semester. Readings of some of the significant novels of the nineteenth century. (Parsons.)

Spanish 112. Modern Spanish Drama. (3)

Second semester. (Not offered 1961-62.) Significant plays of the nineteenth and twentieth centuries. (Nemes.)

Spanish 113. The Spanish Novel of the Twentieth Century. (3)

Second semester. (Not offered 1961-62.) Significant novels of the twentieth century. (Rand.)

Spanish 115. Modern Spanish Thought. (3)

First semester. The generation of 1898 and other significant and interpretative writings of the twentieth century. (Rand.)

Spanish 121, 122. Advanced Composition. (3, 3)

First and second semesters. Training in self-expression in Spanish, free composition, letter writing. (Goodwyn.)

Spanish 151. Spanish-American Fiction. (3)

First semester. The novel and short story from the Wars of Independence to the present and their reflection of society in the republics of the Western Hemisphere. (Nemes.)

Spanish 152. Spanish-American Poetry. (3)

Second semester. Representative poetry after 1800 and its relation to European trends and writers. (Nemes.)

Spanish 153. Spanish-American Essay. (3)

First and second semesters. Social and political thought from Bolivar to Vasconcelos and its relationship to social and political conditions in Spanish America. (Nemes.)

Foreign Languages and Literatures

Spanish 161, 162. Spanish Civilization. (3, 3)

First and second semesters. Introductory study of the literary, educational, artistic traditions; great men, customs, and general culture. (Rand.)

Spanish 163, 164. Latin-American Civilization. (3, 3)

First and second semesters. (Not offered 1961-62.) Introductory study of the cultures of Latin America; the historical-political background and the dominating concepts in the lives of the people. (Goodwyn.)

Spanish 199. Rapid Review of the History of Spanish Literature. (1)

Second semester. Especially designed for Spanish majors. (Parsons.)

For Graduates

The requirements of students will determine which courses will be offered.

Spanish 202. The Golden Age in Spanish Literature. (3)

(Goodwyn.)

Spanish 203, 204. Spanish Poetry. (3, 3)

(Goodwyn.)

Spanish 205, 206. Spanish Literature of the Twentieth Century. (3, 3)

(Rand.)

Spanish 211. Spanish Linguistics. (3)

First semester. (Not offered 1961-62.) (Parsons, Bulatkin.)

Spanish 212. Old Spanish Readings. (3)

Second semester. (Not offered 1961-62.) (Parsons, Bulatkin.)

Spanish 221, 222. Reading Course. (Arranged)

Designed to give the graduate student a background of a survey of Spanish literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

Spanish 230. Introduction to European Linguistics. (3)

(Smith, Bulatkin.)

Spanish 251, 252. Seminar. (3, 3)

Required of all graduate majors in Spanish. (Staff.)

Spanish 399. Research.

Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

RUSSIAN

Russian 1, 2. Elementary Russian. (3, 3)

First and second semesters. Elements of grammar; pronunciation and conversation; exercises in translation. One laboratory period per week. (Boborykine.)

Russian 3. Elementary Conversation. (1)

First and second semesters. Open to all students who have completed their first year Russian or Russian 1 with the grade "A" or "B". (Boborykine.)

Russian 4, 5. Intermediate Russian. (3, 3)

First and second semesters. Prerequisite, Russian 2 or equivalent. Reading of texts designed to give some knowledge of Russian life, thought and culture. (Boborykine.)

Russian 8, 9. Intermediate Conversation. (2, 2)

First and second semesters. Prerequisite: for Russian 8, Russian 3 or consent of instructor; for Russian 9, Russian 8 or consent of instructor. (Boborykine.)

Russian 10, 11. Scientific Russian. (3, 3)

Prerequisite, Russian 5 or equivalent. (Boborykine.)

Russian 71, 72. Review Grammar and Composition. (3, 3)

First and second semesters. Prerequisite, first and second year Russian. Designed to give a thorough training in the structure of the language; drill in Russian composition. (Boborykine.)

Russian 75, 76. Introduction to Russian Literature. (3, 3)

First and second semesters. Prerequisite, second-year Russian or equivalent. An elementary survey of Russian literature. (Hitchcock.)

Russian 80, 81. Advanced Conversation. (3, 3)

First and second semesters. Prerequisite, Russian 8, 9, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Hitchcock.)

For Advanced Undergraduates and Graduates

Russian 101, 102. Modern Russian Literature. (3, 3)

First and second semesters. Works of Maxim Gorky, Alexei Tolstoy, P. Romanov, M. Zoshchenko, M. Sholokhov. (Boborykine.)

Russian 103, 104. Russian Literature of the Nineteenth Century. (3, 3)

First and second semesters. Selected writings of Pushkin, Gogol, Lermantov, Turgenyev, Dostoevsky, Leo Tolstoy, Chekhov. (Boborykine.)

HEBREW

Hebrew 1, 2. Elementary Hebrew. (3, 3)

First and second semesters. Elements of grammar; pronunciation and conversation; exercises in translation. (Greenberg.)

Hebrew 3. Elementary Conversation. (1)

First semester. Prerequisite, Hebrew 1 and consent of instructor. (Greenberg.)

Hebrew 4, 5. Intermediate Hebrew. (3, 3)

First and second semesters. Prerequisite, Hebrew 2 or equivalent. Texts designed to give some knowledge of Hebrew life, thought, and culture. (Greenberg.)

Hebrew 8, 9. Intermediate Conversation. (2, 2)

First and second semesters. Prerequisite: for Hebrew 8, Hebrew 3 or consent of instructor; for Hebrew 9, Hebrew 8 or consent of instructor. An intermediate practice course in spoken Hebrew. (Greenberg.)

Foreign Languages and Literatures

Hebrew 75, 76. Introduction to Hebrew Literature. (3, 3)

First and second semesters. Prerequisite, second year Hebrew or equivalent.

(Greenberg)

Hebrew 101. The Hebrew Bible. (3)

(Not offered 1961-62.) Reading of selected portions of the Pentateuch. (Greenberg.)

Hebrew 102. The Hebrew Bible. (3)

(Not offered 1961-62.) Reading of selected portions of the Prophets. (Greenberg.)

Hebrew 103. Modern Hebrew Literature. (3)

The period of the Haskalah (Enlightenment).

(Greenberg.)

Hebrew 104. Modern Hebrew Literature. (3)

The period of the Tehiah (Modern Revival).

(Greenberg.)

CHINESE

Chinese 1, 2. Elementary Chinese. (3, 3)

First and second semesters. Three recitations and one laboratory period per week. Elements of pronunciation, simple ideograms, colloquial conversation, translation.

(Chen.)

Chinese 4, 5. Intermediate Chinese. (3, 3)

First and second semesters. Prerequisite, Chinese 2 or equivalent. Reading of texts designed to give some knowledge of Chinese life, thought, and culture.

(Chen.)

Chinese 101, 102. Readings from Chinese History. (3, 3)

First and second semesters. Prerequisite, Chinese 5 or equivalent. Based on an anthology of historians from the Chou to the Ching dynasties.

(Chen.)

Chinese 161, 162. Chinese Civilization. (3, 3)

First and second semesters. This course supplements Geog. 134 and 135, *Cultural Geography of East Asia*. It deals with Chinese literature, art, folklore, history, government, and great men. Second semester: developments in China since 1911. The course is given in English translation. Chinese 161 and 162 may be counted as history credits in meeting major and minor requirements.

(Chen.)

ITALIAN

Italian 1, 2. Elementary Italian. (3, 3)

Three recitations and one laboratory hour per week. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. A student who has had two units of Italian in high school may take Italian 1 for purposes of review, but not for credit.

(Carozza.)

Italian 3. Elementary Conversation. (1)

Open to all students who have completed their first year Italian or Italian 1 with the grade "A" or "B".

(Staff.)

Italian 4, 5. Intermediate Italian. (3, 3)

First and second semesters. Prerequisite, Italian 2 or equivalent. Reading of texts designed to give some knowledge of Italian life, thought, and culture.

(Carozza.)

Italian 161, 162. Italian Life and Customs. (3, 3)

Not offered on the College Park campus. An introductory study of the Italian people against a background of political and social history. A survey of Italian literary and cultural traditions.

GEOGRAPHY

Students in the College of Arts and Sciences may select geography as a major field, and may also take courses in this Department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

GEOLOGY

Lecturer: BROWN.

Geol. 1. Geology. (3)

A study dealing primarily with the principles of dynamical and structural geology. Designed to give a general survey of the rocks and minerals composing the earth; the movement within it; and its surface features and the agents that form them.

Geol. 2. Engineering Geology. (2)

The fundamentals of geology with engineering applications.

GOVERNMENT AND POLITICS

Students in the College of Arts and Sciences may select government and politics as a major field, and may also take courses in this Department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

HISTORY

Professor and Head: LAND.

Professors: BAUER, CHATELAIN, GEWEHR (EMERITUS), MERRILL, PRANGE AND WELLBORN.

Associate Professors: GORDON, JASHEMSKI, SPARKS AND STROMBERG.

Assistant Professors: CALLCOTT, CONKIN, CROSMAN, FARQUHAR, FERGUSON AND RIVLIN.

Instructors: GATELL, PITT AND YANEY.

H. 5, 6. History of American Civilization. (3, 3)

Required of all students who entered the University after 1944-45. Normally to be taken in the sophomore year. An historical survey of the main forces in American life with emphasis upon the development of our democratic heritage. First semester from the colonial period through the Civil War. Second semester, since the Civil War.
(American History Staff.)

H. 41, 42. Western Civilization. (3, 3)

This course is designed to give the student an appreciation of the civilization in which he lives in its broadest setting. The study begins with the collapse of classical civilization and comes to the present.
(European History Staff.)

History

H. 51, 52. *The Humanities.* (3, 3)

Either of these courses may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. In surveying history from prehistoric times to the present, man's cultural development is emphasized. The course is a study of the achievements of the various civilizations which have contributed to the common cultural heritage of western civilization. It is designed as an introductory course in history which will make a more direct contribution to the other liberal art fields. First semester to the Renaissance. Second semester since the Renaissance.

(Jashemski.)

H. 53, 54. *History of England and Great Britain.* (3, 3)

A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors and pre-law students. First semester to 1485. Second semester, since 1485.

(Gordon.)

H. 56. *American Life and Thought.* (3)

Required of all students who qualify by examination for exemption from H. 5, 6. Normally to be taken in sophomore year. A survey of significant historical trends and selected problems in the development of American civilization from the colonial era to recent times. Not to be used as a general elective course. (American History Staff.)

H. 61, 62. *Far Eastern Civilization.* (3, 3)

This course seeks to give the student an understanding of a great civilization radically different from our own and an appreciation of the complex problems of the Far East and of American policy there. The approach is interdisciplinary within an historical framework.

(Farquhar.)

H. 71, 72. *Islamic Civilization.* (3, 3)

This course seeks to give the student an insight into a cultural heritage that dominates the lives of over four hundred million people today. The study covers Islam in Spain, North Africa, Africa below the Sahara, India, and Indonesia as well as the Middle East. The approach is humanistic within an historical framework. (Rivlin.)

For Advanced Undergraduates and Graduates

AMERICAN HISTORY

H. 101. *American Colonial History.* (3)

Prerequisite, H. 5, 6, or the equivalent. The settlement and development of colonial America to the middle of the eighteenth century.

(Ferguson.)

H. 102. *The American Revolution.* (3)

Prerequisite, H. 5, 6, or the equivalent. The background and course of the American Revolution through the formation of the Constitution.

(Ferguson.)

H. 103. *The Formative Period in America, 1789-1824.* (3)

The evolution of the federal government, the origins of political parties, problems of foreign relations in an era of international conflict, beginnings of the industrial revolution in America, and the birth of sectionalism.

(Ferguson.)

H. 105. *Social and Economic History of the United States to 1865.* (3)

Prerequisite, H. 5, 6, or the equivalent. A synthesis of American life from independence through the Civil War.

(Chatelain.)

H. 106. *Social and Economic History of the United States since the Civil War.* (3)

Prerequisite, H. 5, 6, or the equivalent. The development of American life and institutions, with emphasis upon the period since 1876. (Chatelain.)

H. 114. *The Middle Period of American History 1800-1860.* (3)

Prerequisite, H. 5, 6, or the equivalent. An examination of the political history of the U. S. from Jefferson to Lincoln with particular emphasis on the factors producing Jacksonian democracy, Manifest Destiny, the Whig Party, the anti-slavery movement, the Republican Party, and secession. (Sparks.)

H. 115. *The Old South.* (3)

Prerequisite, H. 5, 6, or the equivalent. A study of the institutional and cultural life of the ante-bellum South with particular reference to the background of the Civil War. (Staff.)

H. 116. *The Civil War.* (3)

Prerequisite, H. 5, 6, or the equivalent. Military aspects; problems of the Confederacy; political, social, and economic effects of the war upon American society. A tour of one selected battlefield is a required part of the course. (Sparks.)

H. 118, 119. *Recent American History.* (3, 3)

Prerequisite, H. 5, 6, or the equivalent. Party politics, domestic issues, foreign relations of the United States since 1890. First semester, through World War I. Second semester, since World War I. (Merrill.)

H. 121. *History of the American Frontier.* (3)

Prerequisite, H. 5, 6, or the equivalent. The Trans-Allegheny West. The westward movement into the Mississippi Valley. (Pitt.)

H. 124. *Reconstruction and the New Nation 1865-1896.* (3)

Prerequisite, H. 5, 6, or the equivalent. Problems of construction in both South and North. Emergence of big business and industrial combinations. Problems of the farmer and laborer. (Merrill.)

H. 127, 128. *Diplomatic History of the United States.* (3, 3)

Prerequisite, H. 5, 6, or the equivalent. An historical study of the diplomatic negotiations and foreign relations of the United States. First semester from the Revolution to the Civil War; second semester, from the Civil War to the present. (Wellborn.)

H. 129. *The United States and World Affairs.* (3)

Prerequisite, H. 5, 6, or equivalent. A consideration of the changed position of the United States with reference to the rest of the world since 1917. (Wellborn.)

H. 133, 134. *The History of Ideas in America.* (3, 3)

Prerequisite, H. 5, 6, or the equivalent. An intellectual history of the American people, embracing such topics as liberty, democracy, and social ideas. (Conkin.)

H. 135, 136. *Constitutional History of the United States.* (3, 3)

Prerequisite, H. 5, 6, or the equivalent. A study of the historical forces resulting in the formation of the Constitution, and the development of American constitutionalism in theory and practice thereafter. (Gatell.)

H. 141, 142. *History of Maryland.* (3, 3)

Prerequisite, H. 5, 6, or equivalent. First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union. (Chatelain.)

History

H. 145, 146. *Latin American History.* (3, 3)

Prerequisite, 6 hours of fundamental courses. A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester, the colonial period. Second semester, the Republics. (Crosman.)

H. 147. *History of Mexico.* (3)

The history of Mexico with special emphasis upon the independence period and upon relations between ourselves and the nearest of our Latin American neighbors. (Crosman.)

H. 148. *History of Canada.* (3)

Prerequisites, H. 41, 42, or H. 53, 54. A history of Canada, with special emphasis on the nineteenth century and upon Canadian relations with Great Britain and the United States. (Gordon.)

EUROPEAN HISTORY

H. 151. *History of the Ancient Orient and Greece.* (3)

A survey of the ancient empires of Egypt, the Near East, and Greece, with particular attention to their institutions, life, and culture. (Jashemski.)

H. 153. *History of Rome.* (3)

A study of Roman civilization from the earliest beginnings through the Republic and down to the last centuries of the Empire. (Jashemski.)

H. 155. *Medieval Civilization.* (3)

Prerequisite, H. 41, 42, or H. 53, 54, or the permission of the instructor. A survey of medieval life, culture, and institutions from the fall of the Roman Empire to the thirteenth century. (Staff.)

H. 159, 160. *History of European Ideas.* (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54 or the equivalent. Beginning with a review of the basic Western intellectual traditions as a heritage from the Ancient World, the course will present selected important currents of thought from the scientific revolution of the sixteenth and seventeenth century down to the twentieth century. First semester through the eighteenth century. Second semester, nineteenth and twentieth centuries. (Stromberg.)

H. 161. *The Renaissance and Reformation.* (3)

Prerequisite, H. 41, 42, or 53, or the permission of the instructor. The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years War. (Staff.)

H. 163, 164. *History of the British Empire.* (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783). Second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire. (Gordon.)

H. 165. *Constitutional History of Great Britain.* (3)

A survey of constitutional development in England with emphasis on the real property aspects of feudalism, the growth of the common law, the development of Parliament, and the expansion of liberties of the individual. (Gordon.)

H. 167, 168. *History of Russia.* (3, 3)

A history of Russia from the Slavic invasions to the present.

(Yaney.)

H. 169, 170. *Europe in the Nineteenth Century, 1815-1919.* (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. A study of the political, economic, social, and cultural development of Europe from the Congress of Vienna to the First World War.

(Bauer.)

H. 171, 172. *Europe in the World Setting of the Twentieth Century.* (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance.

(Prange.)

H. 173. *The Soviet Union.* (3)

A history of the Bolshevik Revolution and the founding of the Soviet Union: the economic policy and foreign policy of the U. S. S. R. to the present.

(Yaney.)

ASIAN HISTORY

H. 181, 182. *The Middle East.* (3, 3)

Prerequisites, six hours from the following groups of courses: H. 41, 42; H. 51, 52; or H. 53, 54. A survey of the historical and institutional developments of the nations of this vital area. The Islamic Empires and their cultures; impact of the west; breakup of the Ottoman Empire and rise of nationalism; present day problems.

(Rivlin.)

H. 183. *The Contemporary Middle East.* (3)

H. 181 or 182 recommended though not required. The development of middle eastern institutions in the nineteenth and twentieth centuries with reference to the emergence of contemporary states and their place in world affairs.

(Rivlin.)

H. 187, 188. *History of China.* (3, 3)

A history of China from earliest times to the present. The emphasis is on the development of Chinese institutions that have molded the life of the nation and its people.

(Farquhar.)

H. 199. *Proseminar in Historical Writing.* (3)

First and second semesters. Discussions and research papers designed to acquaint the student with the methods and problems of research and presentation. The student will be encouraged to examine those phases of history which he regards as his specialties.

(Staff.)

For Graduates

H. 200. *Historiography: Techniques of Historical Research and Writing.* (3)

An introduction to the professional study of history, including an examination of the sources and nature of historical knowledge, historical criticism, and synthesis. Required of all candidates for advanced degrees in history.

(Staff.)

H. 201. *Seminar in American History.* (3)

(American History Staff.)

H. 202. *Historical Literature: American.* (1-6)

Readings in the standard works and monographic studies to meet the requirements of qualified graduate students who need intensive concentration in American history.

(American History Staff.)

History

- H. 203. *Seminar in the History of Maryland.* (3)
(Land.)
- H. 205. *Seminar in American Economic History.* (3)
A seminar in the problems of American economic history of selected periods.
(Chatelain.)
- H. 206. *Seminar in American Social History.* (3)
A seminar in the problems of American social history of selected periods. (Pitt.)
- H. 208. *Seminar in Recent American History.* (3)
Emphasis will be placed on the period since 1900. (Merrill.)
- H. 211. *Seminar in American Colonial History.* (3)
A seminar on selected problems of early American history. (Land.)
- H. 212. *Seminar in the American Revolution.* (3)
A seminar on problems of American history in the revolutionary era. (Ferguson.)
- H. 214. *Seminar in the Middle Period of American History.* (3)
A seminar in the sources and problems of American political and military history from the Jackson Era to the election of Lincoln. (Sparks.)
- H. 215. *Seminar in the Old South.* (3)
A seminar on problems in the history of the ante-bellum South. (Staff.)
- H. 216. *Seminar in the American Civil War.* (3)
A seminar in the sources and problems of the history of the American Civil War. Military and political problems are emphasized. (Sparks.)
- H. 217. *Seminar in Reconstruction America.* (3)
A seminar on problems resulting from the Civil War: political, social, and economic reconstruction. (Merrill.)
- H. 221. *Seminar in Western History.* (3)
A seminar on American frontier history in the trans-Appalachian region and the Great Plains. (Pitt.)
- H. 233. *Seminar in Early American Intellectual History.* (3)
A seminar on selected problems of American intellectual history before 1859. (Conkin.)
- H. 234. *Seminar in Recent American Intellectual History.* (3)
A seminar on problems of American intellectual history since 1859. (Conkin.)
- H. 245. *Topics in Latin American History.* (3)
Selected readings, research, and conferences on important topics in Latin American history. (Crosman.)
- H. 251. *Seminar in Greek History.* (3)
(Jashemski.)
- H. 253. *Seminar in Roman History.* (3)
(Jashemski.)
- H. 255. *Medieval Culture and Society.* (3)
Readings and conferences designed to acquaint the student with the important litera-

ture and interpretations of such topics as feudalism, the medieval church, schools and universities, Latin and vernacular literature, art and architecture.

(Staff.)

H. 260. *Historical Literature: European.* (1-6)

Readings in the standard works and monographic studies to meet the requirements of qualified graduate students who need intensive concentration in European history.

(European History Staff.)

H. 265. *Seminar in Middle Eastern History.* (3)

A seminar in selected problems of Middle Eastern history.

(Rivlin.)

H. 269. *Seminar in Nineteenth Century Europe.* (3)

A seminar on problems in the history of western Europe during the nineteenth century.

(Bauer.)

H. 281. *Problems in the History of World War I.* (3)

Investigation of various aspects of the First World War, including military operations, diplomatic phases, and political and economic problems of the War and its aftermath.

(Prange.)

H. 282. *Problems in the History of World War II.* (3)

Investigation of various aspects of the Second World War, including military operations, diplomatic phases, and political and economic problems of the war and its aftermath.

(Prange.)

H. 285. *Seminar in the History of Britain.* (3)

A seminar in selected problems of the history of the United Kingdom.

(Gordon.)

H. 286. *Seminar in the History of the British Empire.* (3)

A seminar on selected problems in the history of the British empire.

(Gordon.)

H. 289. *Seminar in Chinese History.* (3)

A seminar on selected problems in the history of China.

(Farquhar.)

H. 290. *Historical Literature: Asian.* (1-6)

Readings in the standard works and monographic studies to meet the requirements of qualified graduate students who need intensive concentration in Asian history.

(Asian History staff.)

H. 390. *The Teaching of History in Institutions of Higher Learning.* (1)

Investigation and discussion of professional teaching of history at the college level: course construction, presentation of subject matter, testing, instructional aids, evaluation of instruction. Required of all graduate assistants.

(Land, Staff.)

H. 399. *Thesis Research.* (1-6)

(Staff.)

LIBRARY SCIENCE

Professor and Head: ROVELSTAD.

Assistant Professors: COX AND URBAN.

Instructors: BAEHR, CARPER, DONAHUE, HAYES, PHILLIPS, PIERSON AND WEDEMEYER.

Library Science, Mathematics

L. S. 1, 2. Library Methods. (1, 1)

First and second semesters. These introductory courses are intended to help students to use libraries with greater facility and effectiveness. Instruction, given in the form of lectures and practical work, is designed to interpret the library and its resources to the students. The courses consider the classification of books in libraries, the card catalog, periodical literature and indexes, and certain essential reference books which will be found helpful throughout the college course and in later years. (Staff.)

L. S. 101S. School Library Administration. (3)

No prerequisite. The organization and maintenance of effective library service in the modern school. Planning and equipping library quarters, purpose of the library in the school, standards, instruction in the use of books and libraries, training student assistants, acquisition of materials, repair of books, publicity, exhibits, and other practical problems.

L. S. 102S. Cataloging and Classification. (3)

No prerequisite. Study and practice in classifying books and making dictionary catalog for school libraries. Study of simplified forms as used in the Children's Catalog, Standard Catalog for High School Libraries, and Wilson printed cards.

L. S. 103S. Book Selection for School Libraries. (3)

No prerequisite. Principles of book selection as applied to school libraries. Practice in the effective use of book selection aids in the preparation of book lists. Evaluating of publishers, editions, translations, format, etc.

L. S. 104S. Reference and Bibliography for School Libraries. (4)

No prerequisite. Evaluation, selection, and use of standard tools, such as encyclopedias, dictionaries, periodical indexes, atlases, and yearbooks for school libraries. Study of bibliographical procedures and forms.

L. S. 111. Introduction to Fundamentals of Special Library Service. (3)

No prerequisite. An introductory course of library methods as applied to an organization in which the primary function of the library is bibliographic control of material pertinent to the specialized field of the organization. A course planned to train in general library methods a person who already is a specialist in some particular phase of library service.

MATHEMATICS

Professor and Head: COHEN.

Professors: DIAZ, DOUGLIS, FULLERTON, GOOD, JACKSON, MARTIN, MAYOR (P.T.), RICHESON AND STELLMACHER.

Research Professors: PAYNE* AND WEINSTEIN*.

Associate Professors: BRACE, HORVATH, HUMMEL, LUDFORD* AND ZELÉN.

Assistant Professors: CORREL, EHRLICH, KARP, LEHNER, PEARL, PUKANSZKY (P.T.), REINHART (P.T.), ROSEN, SHEPHERD AND ZEDEK.

Instructors: BREWSTER, DYER, FUSARO, HENNEY, JONES, LEPSON, MAR, MC CLAY, SEDGWICK, VANDERSLICE, (P.T.) AND ZEMEL.

Lecturers: GARSTENS (P.T.) AND SINKOV (P.T.)

The Mathematics Department Colloquium meets frequently throughout the academic year for reports on current research by the resident staff, visit-

*Member of the Institute for Fluid Dynamics and Applied Mathematics

ing lecturers, and graduate students. In addition the Institute for Fluid Dynamics and Applied Mathematics Colloquium meets at frequent intervals for reports on research in those fields. All colloquium meetings are open to the public.

The local chapter of Pi Mu Epsilon, national honorary mathematics fraternity, under the guidance of the faculty adviser, Dr. MacCarthy, meets regularly for the discussion of mathematical topics of interest to the undergraduate. The programs are open to the public.

The following courses are open to students who offer at least one unit of algebra for entrance: Math. 1, 5, or 10.

The following course is open to students who offer two or more units of algebra for entrance: Math. 18.

Students are enrolled in Math. 5, 10, or 18 provided they pass the mathematics section of the general classification test given to incoming students during registration. Students who fail this test should enroll in Math. 0 if their curriculum calls for Math. 5 or 10, and in Math. 1 if their curriculum calls for Math. 18.

In general students should enroll in only one of the course sequences, Math. 5, 10-11, 18-19. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 5, 10, 18. Credit in only one course: the one enrolled in latest.

Math. 11, 18. Math. 11—2 credits; Math. 18—5 credits.

Math. 0. Basic Mathematics. (0)

First and second semesters. Recommended for students whose curriculum calls for Math. 5 or 10 and who fail the qualifying examinations for these courses. Special fee, \$30. The fundamental principles of algebra. (Henney, Staff.)

Math. 1. Introductory Algebra. (0)

First and second semesters. Prerequisite, one unit of algebra. Recommended for students whose curriculum calls for Math. 18 and who fail the qualifying examination for this course. Special fee, \$30. A review of the topics covered in a second course in algebra. (Henney, Staff.)

Math. 3. Fundamentals of Mathematics. (4)

First and second semesters. This course is open to all students and is designed to give an introduction to mathematical thinking. Content: logical structure for several elementary mathematical systems, historical advances in typical phases of mathematics and their role in world development, famous unsolvable problems, currently unsolved problems, applications of mathematics to other fields of learning. (Douglass, Staff.)

Math. 5. Business Algebra. (3)

First and second semesters. Summer session. Prerequisite, one unit of algebra. Open only to students in the College of Business and Public Administration, the College of Agriculture, the Department of Air Science, and the Department of Industrial Edu-

Mathematics

cation. Note regulation above in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, fractions, ratio and proportion, linear equations, exponents, logarithms, percentage, trade discount, simple interest, bank discount, true discount, and promissory notes. (Shepherd, Staff.)

Math. 6. Mathematics of Finance. (3)

First and second semesters. Summer session. Prerequisite, Math. 5 or equivalent. Required of students in the College of Business and Public Administration, and open to students in the College of Arts and Sciences only for elective credit. Line diagrams, compound interest, simple interest, ordinary annuities, general annuities, deferred annuities, annuities due, perpetuities, evaluation of bonds, amortization, and sinking funds. (Shepherd, Staff.)

Math. 10. Algebra. (3)

First and second semesters. Summer session. Prerequisite, one unit each of algebra and plane geometry. Open to biological, pre-medical, pre-dental, and general Arts and Sciences students. Note regulation above, in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability, mathematics of investment. (Horvath, Staff.)

Math. 11. Trigonometry and Analytic Geometry. (3)

First and second semesters. Summer session. Prerequisite, Math. 10 or equivalent. Open to biological, pre-medical, pre-dental, and general Arts and Sciences students. This course is not recommended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19. Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, locus problems, the straight line and circle, conic sections, graphs. (Horvath, Staff.)

Math. 13. Elements of Mathematical Statistics. (3)

Second semester. Prerequisite, Math. 10 or equivalent. Frequency distributions, averages, moments, measures of dispersion, the normal curve, curve fitting, regression and correlation. (Zelen.)

Math. 18, 19. Elementary Mathematical Analysis. (5, 5)

First and second semesters. Summer session. Prerequisites, high school algebra completed and plane geometry. Open to students in the physical sciences, engineering, and education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 5, 10-11, 18-19. The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, matrices, and solid analytic geometry. (Horvath, Staff.)

Math. 20, 21. Calculus. (4, 4)

First and second semesters. Summer session. Three lectures and two one-hour drill periods a week. Prerequisite, Math. 19 or equivalent. Open to students in engineering, education, and the physical sciences. Limits, derivatives, differentials, maxima and minima, curve sketching, rates, curvature, kinematics, integration with geometric and physical applications, partial derivatives, space geometry, multiple integrals, infinite series. (Horvath, Staff.)

Mathematics

Math. 30. *Elements of Mathematics.* (4)

Prerequisite, high school elementary algebra highly desirable. Preferred course in mathematics for elementary education majors. Topics from algebra and number theory are presented to provide a proper mathematical insight into arithmetic for the prospective elementary school teacher. Topics included are: inductive proof, the system of natural numbers based on the Peano axioms, mathematical systems, groups, fields, the system of integers, the system of rational numbers, congruences, divisibility, systems of enumeration. (Garstens.)

Math. 64. *Differential Equations for Engineers.* (3)

First and second semesters. Summer session. Prerequisite, Math. 21 or equivalent. Required of students in mechanical and electrical engineering. Differential equations of the first and second order with emphasis on their engineering applications. (Horvath, Staff.)

For Advanced Undergraduates and Graduates

ALGEBRA

Math. 100. *Vectors and Matrices.* (3)

First semester. Prerequisite, Math. 21 or equivalent. The algebra of vector spaces and matrices, with emphasis upon those aspects of interest to students in applied mathematics. (Pearl.)

Math. 103, 104. *Introduction to Modern Algebra.* (3, 3)

Prerequisite, Math. 21 or equivalent. For Math. 104, the usual prerequisite of Math. 103 may be waived upon consent of instructor. In Math. 103 are studied the basic concepts of abstract algebra: integral domains, divisibility, congruences; fields, ordered fields; the fields of rational numbers, of real numbers, of complex numbers; polynomial domains over a field, including classical results on the theory of polynomial equations with rational, real, or complex coefficients; unique factorization domains, irreducibility criteria; rings. In Math. 104 are studied groups, vector spaces, linear transformations, matrices. (Hummel.)

Math. 106. *Introduction to the Theory of Numbers.* (3)

Summer session (2). Prerequisite, Math. 21 or equivalent. Integers, divisibility, Euclid's algorithm, Diophantine equations, prime numbers, Moebius function, congruences, residues. (Pukanszky.)

For Graduates

Math. 200, 201. *Modern Algebra.* (3, 3)

Prerequisite, Math. 103 or consent of instructor. Groups, rings, fields, vectors and matrices, linear transformations, linear dependence, rank, canonical forms. (Pearl.)

Math. 202. *Linear Algebra.* (3)

Prerequisite, Math. 201 or consent of instructor. Linear manifolds, the lattice of subspaces, projectivities, dualities, the ring of endomorphisms, the full linear group and its subgroups. (Pearl.)

Math. 203. *Galois Theory.* (3)

Prerequisite, Math. 201 or consent of instructor. Field extensions, automorphisms of

Mathematics

a field, the Galois group of a polynomial equation, solvability by radicals, recent developments in Galois theory. (Good.)

Math. 204, 205. Topological Groups. (3, 3)

Prerequisite, consent of instructor. An introductory course in abstract groups, topological spaces, and the study of collections of elements enjoying both these properties. The concept of a uniform space will be introduced and studied. The representation problem will be considered together with the subject of Lie groups. (Pukanszky.)

Math. 206. Number Theory. (3)

Prerequisite, consent of instructor. Foundations, linear and higher congruences, law of reciprocity, quadratic forms, sieve methods, elements of additive number theory and density, distribution of prime numbers and L-functions, discussion of unsolved problems. (Rieger.)

Math. 208. Ring Theory. (3)

Prerequisite, Math. 201 or consent of instructor. According to the needs of the class, emphasis will be placed on one or more of the following: ideal theory, structure theory of rings with or without minimum condition, division rings, algebras, nonassociative rings. (Ehrlich.)

Math. 209. Group Theory. (3)

Prerequisite, Math. 201 or consent of instructor. According to the needs of the class, emphasis will be placed on one or more of the following aspects of discrete group theory: finite groups, abelian groups, free groups, solvable or nilpotent groups, groups with operators, groups with local properties, groups with chain conditions, extensions. (Ehrlich.)

Math. 271. Selected Topics in Algebra. (3)

(Arranged.) Prerequisite, consent of instructor.

ANALYSIS

For Advanced Undergraduates and Graduates

Math. 110, 111. Advanced Calculus (4, 4)

Prerequisite, Math. 21 or equivalent. Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis, elements of complex variable theory. Emphasis on problems and techniques. (Reinhart.)

Math. 112. Infinite Processes. (3)

Prerequisite, Math. 21 or equivalent. Construction of the real numbers from the rational numbers, sequences of numbers, series of positive and arbitrary numbers, infinite products, conditional and absolute convergence, sequences and series of functions, uniform convergence, integration and differentiation of series, power series and analytic functions, Fourier series, elements of the theory of divergent series, extension of the theory to complex numbers and functions. (Douglass.)

Math. 114. Differential Equations. (3)

Second semester. Prerequisite, Math. 110 or equivalent. Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory. (Pukanszky.)

Math. 115. Partial Differential Equations. (3)

Prerequisite, Math. 114. Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications. (Martin.)

Math. 117. Fourier Series. (3)

Prerequisite, Math. 114 or equivalent. Representation of functions by series of orthogonal functions. Applications to the solution of boundary value problems of some partial differential equations of physics and engineering. (Ludford.)

For Graduates

Math. 212. Special Functions. (3)

Second semester. Prerequisite, Math. 287 or consent of instructor. Gamma function; second order differential equations in the complex domain, regular and irregular singularities; hypergeometric functions, Riemann's P- functions, Legendre functions, confluent hypergeometric functions, Whittaker functions, Bessel functions. (Diaz.)

Math. 215, 216. Advanced Differential Equations. (3, 3)

Prerequisites, Math. 100 and 111 and 114, or consent of instructor. Existence and uniqueness theorems for systems of ordinary differential equations and for partial differential equations, characteristic theory, reduction to normal forms, the methods of finite differences. (Horvath.)

Math. 218. Integral Equations. (3)

First semester. Prerequisites, Math. 100 and 287, or consent of instructor. Integral equations of the first and second kind, Volterra's equation, Abel's equation and fractional differentiation; the Fredholm theory, the Hilbert-Schmidt theory, Mercer's theorem expansion in orthonormal series; existence theorems of potential theory and other applications. (Payne.)

Math. 272. Selected Topics in Analysis. (3)

(Arranged). Prerequisite, consent of instructor.

Math. 278. Advanced Topics in Complex Analysis. (3)

Prerequisite, Math. 288 or consent of instructor. Material selected to suit interests and background of the students. Typical topics: conformal mapping, algebraic functions, Riemann surfaces, entire functions, Dirichlet series, Taylor's series, geometric function theory. (Hummel.)

Math. 280, 281. Linear Spaces. (3, 3)

Prerequisite, Math. 287 or equivalent. Linear vector spaces and their topologies, linear operations and transformations and their inverses, Banach and Hilbert spaces. (Horvath.)

Math. 286, 287. Theory of Functions. (3, 3)

Prerequisite, Math. 111 or equivalent. Basic topics in real and complex variable theory, real and complex number systems, point sets on the line and in space, continuity, Riemann and Stieltjes integrals, Cauchy integral theorem, residues, power series, analytic functions, introduction to Lebesgue measure and integration. (Brace.)

Math. 288. Theory of Analytic Functions. (3)

First semester. Prerequisite, Math. 287 or a course in complex variables. Advanced topics in complex function theory, properties of power series, entire functions, conformal mapping, classification of singularities, harmonic functions. (Zedek.)

Math. 289. Measure and Integration. (3)

Second semester. Prerequisite, Math. 287 or a course in real variables. Set functions, abstract theory of measure, differentiability properties and absolute continuity of set functions, measurable functions, abstract integration theory, introduction to linear spaces. (Rosen.)

GEOMETRY AND TOPOLOGY

For Advanced Undergraduates and Graduates

Math. 122. Introduction to Point Set Topology. (3)

Prerequisite, Math. 110 or Math 146 or equivalent. Open and closed sets, connectedness, compactness, transformations, homeomorphisms; application of these concepts to various spaces with particular attention to the Euclidean plane. (Reinhart.)

Math. 123. Introduction to Algebraic Topology. (3)

Prerequisite, Math. 122 and 103, or equivalent. Chains, cycles, homology groups for surfaces, the fundamental group. (Reinhart.)

Math. 124. Introduction to Projective Geometry. (3)

Prerequisite, Math. 21 or equivalent. Elementary projective geometry largely from the analytic approach, projective transformations, cross ratio, harmonic division, projective coordinates, projective theory of conics, Laguerre's definition of angle. (Mayor.)

Math. 125. Introduction to Algebraic Geometry. (3)

Prerequisite, Math. 103 or Math. 124 or equivalent. Plane algebraic curves, algebraic functions, ideals in polynomial rings, theory of elimination, points, multiplicity, dimension, theory of places, algebraic varieties, algebraic correspondences, the theories of Riemann-Roch. (Reinhart.)

Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis. (3, 3)

Prerequisite, Math. 21 or equivalent. The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity, and relativity. (Jackson.)

Math. 128. Euclidean Geometry. (3)

Prerequisite, Math. 21 or equivalent. Recommended for students in the College of Education. Axioms of Euclidean geometry; axiomatic method, models, properties of axioms; proofs of some basic theorems from the axioms; modern geometry of the triangle, circle, and sphere. (Jackson.)

Math. 129. Non-Euclidean Geometry. (5)

Prerequisite, Math. 21 or equivalent. Recommended for students in the College of Education. Axiomatic development of non-Euclidean geometry, trigonometry, application of calculus to non-Euclidean geometry. (Jackson.)

For Graduates

Math. 220, 221. Differential Geometry. (3, 3)

Prerequisites, Math. 111 and 150, or consent of instructor. Curves and surfaces,

geometry in the large, the Gauss-Bonnet formula, surfaces of constant curvature.
(Jackson.)

Math. 223, 224. Algebraic Topology. (3, 3)

Prerequisites, Math. 103 and 123, or consent of instructor. Homology, cohomology, and homotopy theory of complexes and spaces.
(Reinhart.)

Math. 225, 226. Set-theoretic Topology. (3, 3)

Prerequisite, Math. 122 or consent of instructor. Foundations of mathematics based on a set of axioms, metric spaces, convergence and connectivity properties of point sets, continua and continuous curves, the topology of the plane.
(Lehner.)

Math. 273. Selected Topics in Geometry and Topology. (3)

(Arranged). Prerequisite, consent of instructor.

PROBABILITY AND STATISTICS

For Advanced Undergraduates and Graduates

Math. 130. Probability. (3)

First semester. Prerequisite, Math. 21 or equivalent. Combinatory analysis, total, compound, and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors.
(Zelen.)

Math. 132. Statistical Methods in the Engineering and Physical Sciences. (3)

Prerequisite, consent of instructor. For experimental scientists who desire to apply statistical methods in the planning and analysis of scientific experiments. Accuracy and precision, expected value operator, law of large numbers, central limit theorem, confidence intervals, theory of least squares, multi-factor experiments; the role of randomization, replication, and balancing in the planning and analysis of experiments; examples drawn from the physical and engineering sciences.
(Zelen.)

Math. 133. Statistical Methods in the Life Sciences. (3)

Prerequisite, consent of instructor. Two lectures and one laboratory period a week. For experimental scientists who desire to apply statistical methods in the planning and analysis of scientific experiments. Basic statistical tools, law of large numbers, central limit theorem, confidence procedures, principles of the planning of experiments, non-parametric techniques, survival curves, the analysis of count data, methods for analyzing quantal response data; examples drawn from the recent literature.
(Zelen.)

For Graduates

Math. 230, 231. Elements of Probability and Mathematical Statistics. (4, 4)

Prerequisite, Math. 111 or consent of instructor. For mathematics majors and other students with mathematical background wishing to acquire theoretical concepts. Axiomatic foundations of probability theory, distribution functions, moments and cumulants, characteristic functions, limit laws, binominal, Poisson, and normal distributions, distributions related to the normal, estimation and testing hypotheses, confidence intervals, Gauss-Markov theorem, general linear hypotheses; selected topics in the design of experiments, multivariate analysis, non-parametric inference, sequential analysis, stochastic processes.
(Zelen.)

Mathematics

HISTORY AND FOUNDATIONS

For Advanced Undergraduates and Graduates

Math. 140. History of Mathematics. (3)

Summer Session (2). Prerequisite, Math. 21 or consent of instructor. A survey of the historical development of mathematics and of the mathematicians who have contributed to that development. (Jackson.)

Math. 146. Fundamental Concepts of Mathematics. (3)

Prerequisite, Math. 21 or consent of instructor. Construction of the number system starting with the Peano axioms for the natural numbers, developments of the algebraic structures associated with the integers and rationals, theory of sets, equivalence classes, order relations, finite and infinite cardinals, positions of the various number systems in the hierarchy of order types. (Correl.)

For Graduates

Math. 244. Mathematical Logic. (3)

Prerequisite, consent of instructor. Propositional calculus, predicate calculus and relations, formal deduction, the deduction theorem and the decision problem. (Karp.)

MATHEMATICAL METHODS

For Advanced Undergraduates and Graduates

Math. 150. Applied Mathematics I (Vector Analysis). (3)

Prerequisite, Math. 21 or equivalent. Algebra and calculus of vectors and applications. (Sedgewick.)

Math. 151. Applied Mathematics II (Complex Variable). (3)

Prerequisite, Math. 21 or equivalent. Open to students in engineering and the physical sciences. Graduate students in mathematics should enroll in Math. 286. Fundamental operations in complex numbers, differentiation and integration, sequences and series, power series, analytic functions, conformal mapping, residue theory, special functions. (Fullerton.)

Math. 153. Applied Mathematics III (Operational Calculus). (3)

Prerequisite, Math. 21 or equivalent. Operational solutions of ordinary and partial differential equations, Fourier and Laplace transforms. (Sedgewick.)

Math. 155. Applied Mathematics IV (Numerical Analysis). (3)

Prerequisites, Math. 110 and 114, or consent of instructor. A brief survey of computing machines, study of errors involved in numerical computations, the use of desk machines and tables, numerical solution of polynomial and transcendental equations, interpolation, numerical differentiation and integration, ordinary differential equations, systems of linear equations. (Good.)

Math. 156. Programming for High Speed Computers. (3)

First and second semesters. Prerequisite, Math. 21 or equivalent. General characteristics of high-speed automatic computers; logic of programming, preparation of flow charts, preliminary and final coding; scaling, use of floating point routines; construc-

tion and use of subroutines; use of machine for mathematical operations and for automatic coding. Each student will prepare and, if possible, run a problem on a high speed computer. (Sinkov.)

Math. 158. Games and Linear Relations. (3)

Prerequisite, Math. 21 or consent of instructor. Theory of games, minimax theorem, theory of linear programming, simplex method, systems of linear inequalities and the nature of their solutions, geometrical interpretations. (Good.)

For Graduates

Math. 250. Tensor Analysis. (3)

First semester. Prerequisites, Math. 100 and 150, or consent of instructor. Algebra and calculus of tensors, Riemannian geometry and its extensions, differential invariants; applications to physics and engineering, and in particular the theory of relativity. (Stellmacher.)

Math. 251. Hilbert Space. (3)

Second semester. Prerequisites, Math. 100 and 287, or consent of instructor. The original and general Hilbert space, scalar product, metric, strong and weak convergence, linear functionals, symmetric operators, complete continuity, eigenvalues, orthonormal systems, Schwartz-Bessel inequality and Parseval identity, eigenvalues in subspaces, spectral theorem. (Weinstein.)

Math. 252. Variational Methods. (3)

Second semester. Prerequisite, Math. 260 or consent of instructor. The Euler-Lagrange equation, minimal principles in mathematical physics, estimation of capacity, torsional rigidity and other physical quantities; symmetrisation, isoperimetric inequalities, estimation of eigenvalues; the minimax principle. (Payne.)

Math. 255, 256. Advanced Numerical Analysis. (3, 3)

Prerequisites, Math. 100 and 155, or consent of instructor. Review of numerical differentiation and integration, solution of ordinary differential equations, stability, accuracy, use of high-speed digital machines, properties of elliptic, hyperbolic and parabolic partial differential equations, conversion of partial differential equations to partial difference equations, stability and convergence of methods for solving partial difference equations, rates of convergence of relaxation methods, gradient methods, iterative methods, the method of characteristics. General methods of solving problems, existence and uniqueness theorems for difference equations associate with partial differential equations, stability of solutions, perturbation, iterative procedures, steepest descent, eigenvalue problems. (Staff.)

MATHEMATICAL PHYSICS

For Advanced Undergraduates and Graduates

Math. 160, 161. Analytic Mechanics. (3, 3)

Prerequisite, Math. 21 or equivalent. Statics, kinematics, dynamics of a particle, elementary celestial mechanics, Lagrangian equations for dynamical systems of one, two, and three degrees of freedom, Hamilton's principle, the Hamilton-Jacobi partial differential equation. (Martin.)

For Graduates

Math. 260. Foundations of Mathematical Physics. (3)

First semester. Prerequisite, consent of instructor. General survey of mathematical methods and results employed in various branches of mathematical physics. The following are among the general topics to be discussed: vector analysis and integral identities (Green-Gauss, Stokes, etc.), ordinary and partial differential and difference equations, integral equations, formulation of typical boundary and initial value problems and indication of the main methods of solution. (Diaz.)

Math. 261, 262. Fluid Dynamics. (3, 3)

Prerequisite, Math. 260 or consent of instructor. Basic kinematic and dynamic concepts, equation of continuity, velocity, potential and stream function, vorticity, Bernoulli's equation; perfect incompressible fluids, Helmholtz' vorticity theorems, plane hydrodynamics, Kutta-Joukowski theory of lift, conformal mapping, vortices and vortex streets, Prandtl-Munk theory of finite wings; viscous fluids, Navier-Stokes equations, boundary layer theory; perfect gases, method of characteristics, subsonic, transonic, and supersonic flows, hodograph method, theory of shock waves. (Ludford.)

Math. 263, 264. Elasticity. (3, 3)

Prerequisites, Math. 100 and 260, or consent of instructor. Stress and strain, nuclei of strain, compatibility equations, Saint-Venant principle, bending, torsion and flexure of beams, complex variable methods, Airy's stress function, axial symmetry, strain energy and potential energy, buckling, bending, and vibration of plates and shells. (Payne.)

Math. 265. Hyperbolic Differential Equations. (3)

First semester. Prerequisite, Math. 260 or consent of instructor. Two variables, Cauchy's problem, characteristics, Riemann's method, properties of the Riemann function, quasi-linear equations and canonical hyperbolic systems, wave equation in n -dimensions, methods of Hadamard and Riesz, Euler-Poisson equation and the singular problems, Huygens' principle. (Stellmacher.)

Math. 266. Elliptic Differential Equations. (3)

Second semester. Prerequisite, Math. 260 or consent of instructor. The equations of Laplace and Poisson, flux, the theorems of Gauss and Green, potentials of volume and surface distributions, harmonic functions, Green's function and the problems of Dirichlet and Neumann; linear elliptic equations with variable coefficients, in particular the equations of Stokes and Beltrami; fundamental solutions, the principle of the maximum, and boundary value problems; introduction to the theory of non-linear equations. (Stellmacher.)

Math. 274. Selected Topics in Applied Mathematics. (3)

(Arranged.) Prerequisite, consent of instructor.

FOR TEACHERS OF MATHEMATICS AND SCIENCE

For Advanced Undergraduates and Graduates

Math. 181. Foundations of Number Theory. (3)

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the

physical sciences, since the course content is usually covered elsewhere in their curriculum. Axiomatic development of the real numbers. Elementary number theory. (Jackson.)

Math. 182. Foundations of Algebra. (3)

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Modern ideas in algebra and topics in the theory of equations. (Good.)

Math. 183. Foundations of Geometry. (3)

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the axioms for Euclidean and non-Euclidean geometry. (Lehner.)

Math. 184. Foundations of Analysis. (3)

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the limit concept and the calculus. (Previous knowledge of calculus is not required.) (Good.)

Math. 199. National Science Foundation Summer Institute for Teachers of Science and Mathematics. Seminar. (1-3)

Lectures and discussions to broaden and deepen the student's appreciation for mathematics as a logical discipline and medium of expression. Special emphasis on topics relevant to current curriculum studies and revisions. (Staff.)

RESEARCH

For Advanced Undergraduates and Graduates

Math. 190, 191. Honors Reading Course. (3, 3)

Prerequisite, permission by the Department to work for honors. Selected reading on topics in mathematics of special interest to the student under the guidance of a staff member. (Cohen.)

For Graduates

Math. 298. Proseminar in Research. (1)

First and second semesters. Prerequisite, one semester of graduate work in mathematics. A seminar devoted to the foundations of mathematics, including mathematical logic, axiom systems, and set theory. (Cohen.)

Math. 399. Research.

(Arranged.)

ASTRONOMY

Astr. 1, 2. Astronomy. (3, 3)

An elementary course in descriptive astronomy.

MICROBIOLOGY

Professor and Head: FABER.

Professors: HANSEN, PELCZAR AND DOETSCH.

Associate Professor: LAFFER.

Lecturer: STADTMAN.

Microb. 1. General Microbiology. (4)

First and second semesters. Summer session. Two lectures and two two-hour laboratory periods a week. Laboratory fee, \$11.00. The physiology, culture and differentiation of microorganisms. Fundamental principles of microbiology in relation to man and his environment. (Pelczar.)

Microb. 50. Cytology of Bacteria. (2)

Second semester. Two lecture periods per week. Prerequisites, Microb. 1. A consideration of the morphology, differentiation, and cytochemistry of the eubacterial cell and related forms. (Doetsch.)

Microb. 60, 62. Microbiological Literature. (1, 1)

First and second semesters. One lecture period a week. Prerequisite, a major in microbiology with junior standing. Introduction to periodical literature, methods, interpretation and presentation of reports. (Doetsch.)

For Advanced Undergraduates and Graduates

Microb. 101. Pathogenic Microbiology. (4)

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 5. Laboratory fee, \$11.00. The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of microorganisms, types of disease, modes of disease transmission, prophylactic, therapeutic and epidemiological aspects. (Faber.)

Microb. 103. Serology. (4)

Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 101. Laboratory fee, \$11.00. Infection and resistance; principles and types of immunity; hypersensitiveness. Fundamental techniques of major diagnostic immunological reactions and their application. (Faber.)

Microb. 104. History of Microbiology. (1)

First semester. One lecture period a week. Prerequisite, a major or minor in microbiology. History and integration of the fundamental discoveries of the science. The modern aspects of cytology, taxonomy, fermentation, and immunity in relation to early theories. (Doetsch.)

Microb. 105. Clinical Methods. (4)

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, consent of instructor. Laboratory fee, \$11.00. A practical course designed to integrate clinical laboratory procedures in terms of hospital and public health demands. (Faber.)

Microb. 108. Epidemiology and Public Health. (2)

Second semester. Two lecture periods a week. Prerequisite, Microb. 1. History, characteristic features, and epidemiology of the important communicable diseases, public health administration and responsibilities; vital statistics. (Faber.)

Microb. 121. Advanced Methods. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, consent of instructor. Laboratory fee, \$11.00. The application of quantitative techniques for measurement of enzyme reactions, mutations, fermentation analyses, and other physiological processes of microorganisms. (Hansen, Pelczar.)

Microb. 131, 133. Applied Microbiology. (4, 4)

First and second semesters. Two lectures and two two-hour laboratory periods a week. Prerequisite, Microb. 1. Laboratory fee \$11.00. The application of microorganisms and microbiological principles to milk, dairy products, and foods; industrial processes; soil; water and sanitation operations. (Doetsch, Hansen, Laffer, Pelczar.)

Microb. 150. Microbial Physiology. (2)

Second semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. Aspects of the growth, death, and energy transactions of microorganisms are considered, as well as the effects of the physical and chemical environment on them. (Doetsch.)

Microb. 160. Cytology of Bacteria. (2)

First semester. Two lecture periods a week. Prerequisite, a major in microbiology or consent of instructor. A consideration of the morphology, differentiation, and cytochemistry of the eubacterial cell and related forms. (Doetsch.)

Microb. 161. Systematic Bacteriology. (2)

First semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. History of bacterial classification; genetic relationships; international codes of nomenclature; bacterial variation as it affects classification. (Hansen.)

Microb. 181. Microbiological Problems. (3)

First and second semesters. Summer session. Prerequisite, 16 credits in microbiology. Registration only upon the consent of the instructor. Laboratory fee, \$11.00. This course is arranged to provide qualified majors in microbiology and majors in allied fields an opportunity to pursue specific microbiological problems under the supervision of a member of the Department. (Faber.)

For Graduates

Microb. 201. Medical Mycology. (4)

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, 30 credits in microbiology and allied fields. Laboratory fee, \$11.00. Primarily a study of the fungi associated with disease and practice in the methods of isolation and identification. (Laffer.)

Microb. 202. Genetics of Microorganisms. (2)

Second semester. Two lecture periods a week. Prerequisite, consent of instructor. An introduction to genetic principles and methodology applicable to microorganisms. Spontaneous and induced mutations, interaction between clones. (Hansen.)

Microbiology, Music

Microb. 204. Bacterial Metabolism. (2)

First semester. Two lecture periods a week. Prerequisite, 30 credits in microbiology and allied fields, including Chem. 161 and 162. Bacterial nutrition, enzyme formation, metabolic pathways and the dissimilation of carbon and nitrogen substrates.

(Pelczar.)

Microb. 206, 208. Special Topics. (1-4, 1-4)

First and second semesters. One lecture period a week. Prerequisite, 20 credits in microbiology. Presentation and discussion of fundamental problems and special subjects in the field of microbiology.

(Staff.)

Microb. 210. Virology and Tissue Culture. (2)

Second semester. Two lecture periods a week. Prerequisite, Microb. 101 or equivalent. Characteristics and general properties of viruses and rickettsiae. Principles of tissue culture.

Microb. 211. Virology and Tissue Culture Laboratory. (2)

Second semester. Two three-hour laboratory periods a week. Prerequisite, Microb. 101 or equivalent. Registration only upon consent of instructor. Laboratory fee, \$20.00. Laboratory methods in virology and tissue culture.

Microb. 214. Advanced Bacterial Metabolism. (1)

Second semester. One lecture period a week. Prerequisite, Microb. 204 and consent of instructor. A discussion of recent advances in the field of bacterial metabolism with emphasis on metabolic pathways of microorganisms.

(Pelczar.)

Microb. 280. Seminar-Research Methods. (1)

First semester. Discussions and reports prepared by majors in microbiology engaged in current research; presentation of selected subjects dealing with recent advances in microbiology.

(Staff.)

Microb. 282. Seminar-Microbiological Literature. (1)

Second semester. Presentation and discussion of current literature in microbiology.

(Staff.)

Microb. 399. Research.

First and second semesters. Summer session. Credits according to work done. Laboratory fee, \$11.00. The investigation is outlined in consultation with and pursued under the supervision of a senior staff member of the Department.

(Staff.)

MUSIC

Professor and Head: ULRICH.

Professors: GRENTZER AND RANDALL.

Associate Professors: JORDAN AND SPRINGMANN.

Assistant Professors: BERMAN, HENDERSON, HENKE AND MEYER.

Instructors: BERNSTEIN, DEVERMOND, GORDON, HEIM AND TRAVER.

Music 1. Introduction to Music. (3)

Second semester. Open only to music or music education majors; other students take Music 20. Music 1 and 20 may not both be counted for credit. Three lectures per week. A study of the forms and styles of music, leading to an intelligent appreciation of the art and providing a foundation for more advanced courses in the Department of Music.

(Ulrich.)

Music 4. Men's Glee Club. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Traver.)

Music 5. Women's Chorus. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Traver.)

Music 6. Orchestra. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Berman.)

Music 7, 8. Theory of Music. (3, 3)

First and second semesters. Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of "C" in Music 8 in order to register for Music 70. (Heim.)

Music 9. Chamber Music Ensemble. (1)

First and second semesters. This course does not fulfill the ensemble requirements of the various curricula. Three laboratory hours per week. Rehearsal and performance of selected works for small ensembles of strings, winds, and piano or small vocal ensembles. May be repeated for credit; the music studied will cover a cycle of about six semesters. (Grentzer, Berman.)

Music 10. Band. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Henderson.)

Music 15. Chapel Choir. (1)

First and second semesters. Summer session. Open to all students in the University, subject to the Director's approval. The Choir will appear at services held in the Memorial Chapel. May be taken until a total of six semester hours of credit has been earned. (Springmann.)

Music 16. Music Fundamentals for the Classroom Teacher. (3)

First and second semesters. Open to students majoring in elementary education or childhood education; other students take Music 7. Music 7 and 16 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning. (Traver.)

Music 20. Survey of Music Literature. (3)

First and second semesters. Three lectures per week. Open to all students except music and music education majors, and may be taken by students who qualify to select courses within Group II of the American Civilization Program. Music 1 and 20 may not both be taken for credit. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today. (Gordon.)

Music

Music 21, 22. Class Voice. (2, 2)

First and second semesters. Four hours per week. A laboratory course in which a variety of voices and vocal problems are represented. Principles of correct breathing as applied to singing; fundamentals of tone production and diction. Students are taught to develop their own voices. Repertoire of folk songs and songs of the Classical and Romantic periods. (Randall.)

Music 23, 24. Class Piano. (2, 2)

First and second semesters. Four hours per week. Functional piano training for beginners. Development of techniques useful for school and community playing. Basic piano techniques; chord, arpeggio, and scale techniques; melody and song playing; simple accompaniments, improvisation for accompaniments and rhythms; sight reading and transposition, and playing by ear. Music 24, continuation of Music 23; elementary repertoire is begun. (de Vermond.)

Music 31, 32. Advanced Class Voice. (2, 2)

First and second semesters. Four hours per week. Prerequisite, Music 22 or equivalent vocal training. Continuation of Music 22, with more advanced repertoire for solo voice and small ensembles. A special section for music-education majors will include the study of methods and materials for teaching class voice. (Henke.)

Music 33, 34. Advanced Class Piano. (2, 2)

First and second semesters. Prerequisite, Music 24 or equivalent piano training. Four hours per week. Advanced keyboard techniques. Continuation of skills introduced in Music 24; transposition, modulation, and sight reading; methods of teaching functional piano. Music 34, development of style in playing accompaniments and in playing for community singing. More advanced repertoire. (de Vermond.)

Music 70, 71. Advanced Theory of Music. (4, 4)

First and second semesters. Prerequisite, Music 8 with a grade of at least "C". Three lectures and two laboratory hours per week. An integrated course of written harmony, keyboard harmony, and ear training. Continuation of the principles studied in Music 8. Harmonic progressions; Music 70, eighteenth century chorale style; Music 71, nineteenth century styles including chromatic and modulatory techniques. Realization of figured basses, and composition in the smaller forms. Advanced study of solfege, with drill in melodic, rhythmic, and harmonic dictation. Application of harmonic principles to the keyboard. (Bernstein, Staff.)

Music 80, 82. Class Study of String Instruments. (2, 2)

First and second semesters. Four laboratory hours per week. Fundamental bowings, technical problems, vibrato, and a study of ensemble materials. Music 80, violin and viola; Music 82, cello and bass, and a continuation of violin. (Berman.)

Music 81, 83. Class Study of Wind Instruments. (2, 2)

First and second semesters. Four laboratory hours per week. A study of wind and percussion instruments, with emphasis on ensemble training. The student will acquire an adequate playing technique on one instrument in both woodwind and brass categories, and must gain an understanding of the acoustic principles and construction of all wind and percussion instruments. (Jordan, Henderson.)

Music 120, 121. History of Music. (3, 3)

First and second semesters. Prerequisites, Music 1 or 20 and junior standing. A study of musical styles from their origins in western Europe to their present-day mani-

festations. The interaction of music and other cultural activities. Music 120, the Greek period to Bach; Music 121, Bach to the present. (Jordan.)

Music 141, 142. Musical Form. (2, 2)

First and second semesters. Prerequisite, Music 70, 71. A study of the organizing principles of musical composition, their interaction in musical forms, and their functions in different styles. Music 141, the phrase to the rondo; Music 142 the larger forms. (Jordan.)

Music 143, 144. Composition. (2, 2)

First and second semesters. (Not offered 1961-62.) Prerequisite, Music 70, 71. The principles of musical composition, and their application to the smaller forms. Original writing in nineteenth and twentieth century musical idioms for various media. (Staff.)

Music 145, 146. Counterpoint. (2, 2)

First and second semesters. (Music 146 not offered 1961-62.) Prerequisite, Music 70, 71. A course in eighteenth century contrapuntal techniques. Study of devices of imitation in the invention and the choral prelude. Original writing in the smaller contrapuntal forms. (Bernstein.)

Music 147, 148. Orchestration. (2, 2)

First and second semesters. (Music 148 not offered 1961-62.) Prerequisite, Music 70, 71. A study of the ranges, musical functions, and technical characteristics of the instruments, and their color possibilities in various combinations. Practical experience in orchestrating for small and large ensembles. (Jordan.)

Music 150. Keyboard Harmony. (2)

First semester. One lecture and two laboratory hours per week. Prerequisite, Music 70, 71. The application to the piano keyboard of the harmonic principles acquired in Music 70, 71. Harmonization of melodies, improvisation and accompanying, playing from dictation, and transposition. (Meyer.)

Music 160, 161. Conducting. (2, 2)

First and second semesters. Music 160 or the equivalent is prerequisite to Music 161. A laboratory course in conducting vocal and instrumental groups. Baton technique, score reading, rehearsal techniques, tone production, style, and interpretation. Music of all periods will be introduced. (Grentzer, Henderson.)

Music 166. Survey of the Opera. (3)

Second semester. (Not offered 1961-62.) Prerequisite, Music 120, 121 or the equivalent. A study of the music, librettos, and composers of the standard operas. (Randall.)

Music 167. Symphonic Music. (3)

First semester. Summer session (2). Prerequisite, Music 120, 121 or the equivalent. The study of orchestral music from the Baroque period to the present. The concerto, symphony, overture, and other forms are examined. (Ulrich.)

Music 168. Chamber Music. (3)

Second semester. Prerequisite, Music 120, 121 or the equivalent. The history and literature of chamber music from the early Baroque period to the present. Music for trio sonata, string quartet and quintet, and combinations of piano and string instruments is studied. (Ulrich.)

Applied Music

Music 169. Choral Music. (3)

First semester. Prerequisite, Music 120, 121 or the equivalent. The history and literature of choral music from the Renaissance to the present, with discussion of related topics such as Gregorian chant, vocal chamber music, etc. (Jordan.)

For Graduates

Music 200. Advanced Studies in the History of Music. (3)

First semester. Prerequisites, Music 120, 121, and consent of instructor. A critical study of one style period (Renaissance, Baroque, etc.) will be undertaken. The course may be repeated for credit, since a different period will be chosen each time it is offered. (Jordan.)

Music 201. Seminar in Musicology. (3)

Second semester. Prerequisites, Music 120, 121 and consent of instructor. The work of one major composer (Bach, Beethoven, etc.) will be studied, with emphasis on musicological method. The course may be repeated for credit, since a different composer will be chosen each time it is offered. (Jordan.)

APPLIED MUSIC

Course number. A new student or one taking applied music for the first time at this University should register for Music X. He will receive the proper classification at the end of his first semester in the Department. Special fee of \$40.00 per semester for each applied-music course.

Section number: Every student taking an applied-music course should, in addition to registering for the proper course number, indicate the instrument chosen by adding a section number as follows:

Sec. 1, Piano	Sec. 6, Bass	Sec. 11, Horn
Sec. 2, Voice	Sec. 7, Flute	Sec. 12, Trumpet
Sec. 3, Violin	Sec. 8, Oboe	Sec. 13, Trombone
Sec. 4, Viola	Sec. 9, Clarinet	Sec. 14, Tuba
Sec. 5, Cello	Sec. 10, Bassoon	Sec. 15, Organ

Music 12, 13. Applied Music. (2-4 hours each course)

First and second semesters. Freshman course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for piano majors in the B. Music curriculum only. Special fee of \$40.00 per semester. The student will register for Music 12, if taken for two hours credit; and Music 12D if taken for four hours credit. The same principle applies to Music 13 and Music 13D. (Staff.)

Music 52, 53. Applied Music. (2-4 hours each course)

First and second semesters. Sophomore course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental majors in the B. Music curriculum only. Prerequisite, Music 13 (or 13D) on the same instrument. Special fee of \$40.00 per semester. The student will

register for Music 52, if taken for two hours credit; and Music 52D, if taken for four hours credit. The same principle applies to Music 53 and Music 53D. (Staff.)

Music 112, 113. Applied Music. (2-4 hours each course)

First and second semesters. Junior course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Music curriculum only. Prerequisite, Music 53 (or 53D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 112, if taken for two hours credit; and Music 112D, if taken for four hours credit. The same principle applies to Music 113 and Music 113D. (Staff.)

Music 152, 153. Applied Music. (2-4 hours each course)

First and second semesters. Senior course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Music curriculum only. Prerequisite, Music 113 (or 113D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 152, if taken for two hours credit; and Music 152D, if taken for four hours credit. The same principle applies to Music 153 and Music 153D. (Staff.)

PHILOSOPHY

Professor and Head: GARVIN.

Associate Professors: LAVINE, PASCH AND SCHLARETZKI.

Instructors: CAPITAN AND DIAMIDOPOULOS.

Phil. 1. Philosophy for Modern Man. (3)

Each semester. Modern man's quest for understanding of himself and his world, with particular reference to American ideas and ideals. This course is one of a group of four courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the program (provided the student has not taken the course in his Group I elective). (Garvin, Staff.)

Phil. 41. Elementary Logic and Semantics. (3)

First semester. An introductory study of logic and language, intended to help the student increase his ability to employ language with understanding and to reason correctly. Topics treated include: the uses and abuses of language, techniques for making sound inferences, and the logic of science. (Schlaretzki.)

Phil. 52. Philosophy in Literature. (3)

Second semester. Reading and philosophical criticism of novels and dramas containing ideas significant for ethics, social policy, and religion. (Lavine.)

Phil. 53. Philosophy of Religion. (3)

First semester. This course seeks to provide the student with the means by which he may approach intelligently the main problems of religious thought: the nature of religious experience, the forms of religious expression, the conflicting claims of religion and science, and the place of religion in the community and in the life of the individual. (Capitan.)

For Advanced Undergraduates and Graduates

Phil. 101. Ancient Philosophy. (3)

First semester. A history of Greek thought from its beginnings to the time of Justinian. The chief figures discussed: the Presocratic philosophers, Socrates, Plato, Aristotle, Epicurus, the Stoic philosophers and Plotinus. (Diamadopoulos.)

Phil. 102. Modern Philosophy. (3)

Second semester. A history of philosophical thought in the West during the 16th, 17th, and 18th centuries. The chief figures discussed: Bacon, Galileo, Descartes, Spinoza, Leibniz, Locke, Berkley, Hume and Kant. (Diamadopoulos.)

Phil. 120. Oriental Philosophy. (3)

Second semester. A brief summary of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist philosophers, and the chief Hindu systems. Discussion of Chinese thought will center about Confucius, Lao-tse and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen. (Staff.)

Phil. 123, 124. Philosophies Men Live By. (2, 2)

First and second semesters. Phil. 123, extension (3). Designed as electives for students who wish to acquaint themselves with the field of philosophy. Phil. 123 not necessarily a prerequisite for Phil. 124. An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man. (Staff.)

Phil. 125. The Great Philosophers. (3)

Offered in Baltimore only. A discussion of the ideas of the great Western philosophers, based on readings in their works. (Staff.)

Phil. 130. The Conflict of Ideals in Western Civilization. (3)

First semester. A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the U. S. and Russia. (Schlaretzki.)

Phil. 140. Philosophical Bases of Educational Theories. (3)

Second semester. A critical study of the foundations of major views regarding the proper ends of education and the implications of these views for educational practice. (Staff.)

Phil. 145. Ethics. (3)

Second semester. A critical study of the problems and theories of human conduct, aimed at developing such principles of ethical criticism as may be applied to contemporary personal and social problems and to the formulation of an ethical philosophy of life. (Schlaretzki, Garvin.)

Phil. 147. Philosophy of Art. (3)

First semester. An inquiry into the nature and functions of art. The course will begin with an examination of the relations between art and imitation, art and craft, art and beauty, art and pleasure, art and form, art and expression, art and not-art, and good, bad, and great art, and conclude with a consideration of the uses of art, propagandistic, religious, escapist, and therapeutic. (Capitan.)

Phil. 152. Philosophy of Social and Historical Change. (3)

First semester. A survey and an assessment of the religious, the philosophic, and the scientific approaches to socio-historic change, including the theories of linear progress, evolutionary progress, cyclical repetition, Hegelian-Marxian dialectic, Weberian secularization and bureaucratization. (Lavine.)

Phil. 154. Political and Social Philosophy. (3)

Second semester. An inquiry into the nature and functions of society and of the state. Attention is given to the major classical and contemporary theories, but the course is not primarily historical. The central problems: determination of the grounds of political obligation; reconciliation of the claims of personal freedom and social welfare. (Schlaretzki.)

Phil. 155. Logic. (3)

Second semester. A critical exposition of deductive logic. The course includes an examination and appraisal of Aristotelian logic and a systematic presentation of the foundations of modern logic. Consideration is given to the application of the techniques of logic in the organization of knowledge and in scientific method. This course does not presuppose Phil. 41, but forms a natural sequel to it. (Pasch.)

Phil. 156. Philosophy of Science. (3)

First semester. An inquiry into the relations of the sciences, the nature of observation, hypotheses, verification, experiment, measurement, scientific laws and theories, the basic concepts and presuppositions of science, and the relations of science to society. (Diamadopoulos.)

Phil. 158. Philosophy of Language. (3)

Second semester. An inquiry into the nature and function of language and other forms of symbolism. (Schlaretzki.)

Phil. 160. Medieval Philosophy. (3)

First semester. A history of philosophic thought in the West from the close of the Classical period to the Renaissance. Based on readings in the Stoics, early Christian writers, Neoplatonists, later Christian writers and Schoolmen. (Staff.)

Phil. 162. American Philosophy. (3)

Second semester. A survey of American philosophical thought from the 18th century to the present. Special attention is given to Edwards, Jefferson, Emerson, Royce, Peirce, James, Dewey and Santayana. (Schlaretzki.)

Phil. 163. Nineteenth Century Idealism. (3)

First semester. A survey of Idealist thought following Kant: the Romantic Idealists, Hegel, Schopenhauer, Nietzsche, the British School. (Garvin.)

Phil. 164. Contemporary Movements in Philosophy. (3)

First semester. A survey of recent and present developments in philosophy. Attention will be given to such thinkers as James, Bergson, Russell, Dewey, and Whitehead and to such movements as Pragmatism, Idealism, Naturalism, Positivism, and Existentialism. Particular consideration will be paid to the bearing of these developments on contemporary problems of science, religion and society. (Garvin.)

Phil. 166. Philosophy of Plato. (3)

First semester. Prerequisite, Phil. 101 or consent of the instructor. A critical study of selected dialogues. (Diamadopoulos.)

Philosophy

Phil. 167. *The Philosophy of Aristotle.* (3)

Second semester. Prerequisite, Phil. 101 or consent of the instructor. A critical study of selected portions of Aristotle's writings. (Diamadopoulos.)

Phil. 168. *The Philosophy of Kant.* (3)

First semester. Prerequisite, Phil. 102 or consent of the instructor. A critical study of selected portions of Kant's writings. (Pasch.)

Phil. 170. *Metaphysics.* (3)

First semester. Prerequisite, 3 hours of philosophy. A critical study of rival metaphysical theories. Analysis of basic metaphysical categories and methods. (Staff.)

Phil. 171. *Epistemology.* (3)

Second semester. Prerequisite, 3 hours of philosophy. Systematic analysis of the central problems in the theory of knowledge. Idealism, realism, phenomenism, pragmatism, empiricism, rationalism, positivism, and language analysis will be discussed in the light of contemporary developments. (Pasch.)

Phil. 175. *Symbolic Logic.* (3)

First semester. Prerequisite, Phil. 41 or 155 or consent of the instructor. A study of the historical development of symbolic logic and a careful analysis of recent systems and techniques. (Garvin.)

Phil. 191, 192, 193, 194. *Topical Investigations.* (1-3)

Each semester. (Staff.)

For Graduates

Phil. 215. *Advanced Philosophy of Religion.* (3)

First semester. Prerequisite, consent of the instructor. Philosophical consideration of selected problems. (Capitan.)

Phil. 220. *Inductive Logic and Scientific Method.* (3)

Second semester. Prerequisite, consent of the instructor. An examination of the logic of scientific procedure and of the structure and validity of scientific generalization. (Pasch.)

Phil. 230. *The British Empiricists.* (3)

First semester. Prerequisite, consent of the instructor. A critical study of selected writings of Locke, Berkeley, and Hume. (Staff.)

Phil. 232. *The Continental Rationalists.* (3)

Second semester. Prerequisite, consent of the instructor. A critical study of the systems of some of the major 17th and 18th century rationalists, with special reference to Descartes, Spinoza, and Leibniz. (Staff.)

Phil. 255. *Seminar in the History of Philosophy.* (1-3)

First semester. Prerequisite, consent of the instructor. (Staff.)

Phil. 256. *Seminar in the Problems of Philosophy.* (1-3)

Second semester. Prerequisite, consent of the instructor. (Staff.)

Phil. 260. *Seminar in Ethics.* (3)

First semester. Prerequisite, consent of the instructor. An examination of representative ethical theories. (Staff.)

Phil. 261. *Seminar in Aesthetics.* (3)

Second semester. Prerequisite, consent of the instructor. An examination of representative aesthetic theories. (Staff.)

Phil. 292. *Selected Problems in Philosophy.* (1-3)

Each semester. Prerequisite, consent of the instructor. (Staff.)

Phil. 399. *Research in Philosophy.* (1-12)

Each semester. (Staff.)

PHYSICS

Professor and Head: TOLL.

Professors: FERRELL, MORGAN, MYERS, SINGER AND WEBER.

Professors (Part-Time): DE LAUNAY, HERZFELD AND F. STERN.

Research Professors: BURGERS* AND OPIK.

Visiting Research Professor: WESKE*.

Associate Professors: HORNYAK, ISKRAUT, LASTER, MAC DONALD, MARION, SNOW AND E. STERN.

Associate Research Professor: HAMA*.

Assistant Professors: BURNSTEIN, DAY, DETENBECK, GRIEM, RODBERG, STEINBERG AND SUCHER.

Assistant Research Professors: BOYD, KASNER, WEISS* AND ZIPOY.

Research Associates: BETTINGER, CHADAN, DIXON, FUJIMOTO, HORSFALL, MAEDA, PRAKASH AND WENTWORTH.

Lecturer: PRATS.

Phys. 1. *Elements of Physics: Mechanics, Heat, and Sound.* (3)

First semester. Three lectures a week. Prerequisite, successful passing of the qualifying examination in elementary mathematics. Lecture demonstration fee, \$3.00. The first half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* (Morgan.)

Phys. 2. *Elements of Physics: Magnetism, Electricity, and Optics.* (3)

Second semester. Three lectures a week. Prerequisite, Phys. 1. Lecture demonstration fee, \$3.00. The second half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* (Morgan.)

Phys. 10, 11. *Fundamentals of Physics.* (4, 4)

First and second semesters. Three lectures, one recitation, and one two-hour laboratory period a week. Prerequisite, entrance credit in trigonometry or Math. 11 or concurrent enrollment in Math. 18. Lecture demonstration and laboratory fee, \$10.00 per semester. A course in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics, and modern physics. *This course satisfies the minimum requirements of medical and dental schools.* (Singer, Steinberg, Staff.)

*Member of the Institute for Fluid Dynamics and Applied Mathematics.

Physics

Phys. 15, 16. Introductory Physics: Mechanics, Fluids, Heat, and Sound. (4, 4)
First and second semesters. Three lectures and two demonstration periods a week. Prerequisites, a high school physics course and concurrent enrollment in Math. 18, 19, or consent of instructor. Lecture demonstration fee, \$3.00 per semester. The first half of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences.

(Hornyak.)

Phys. 17. Introductory Physics: Electricity and Magnetism. (4)

First semester. Three lectures and two demonstration periods a week. Prerequisites, Phys. 15, 16 and concurrent enrollment in Phys. 60 and Math. 20. Lecture demonstration fee, \$3.00. The third quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences.

(Griem.)

Phys. 18. Introductory Physics: Optics and Modern Physics. (4)

Second semester. Three lectures and two demonstration periods a week. Prerequisites, Phys. 17 and concurrent enrollment in Phys. 60 and Math. 21, or consent of instructor. Lecture demonstration fee, \$3.00. The last quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences.

(Griem.)

Phys. 20. General Physics: Mechanics, Heat, and Sound. (5)

First and second semesters. Three lectures, two recitations and one two-hour laboratory period a week. Math. 20 to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. The first half of a course in general physics. *Required of all students in the engineering curricula.*

(Iskraut, MacDonald, Myers, Staff.)

Phys. 21. General Physics: Electricity, Magnetism, and Optics. (5)

First and second semesters. Three lectures, two recitations, and one two-hour laboratory period a week. Prerequisites, Phys. 20, Math. 21 to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. The second half of a course in general physics. *Required of all students in the engineering curricula.*

(Burnstein, Iskraut, MacDonald, Staff.)

Phys. 50, 51. Intermediate Mechanics. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, Phys. 11 or 21.

(Morgan.)

Phys. 52. Heat. (3)

First semester. Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 20 is to be taken concurrently.

(Mason, Vanderslice.)

Phys. 53. Nuclear Physics and Radioactivity. (3)

Second semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 11 or 21.

(Ferrell.)

Phys. 54. Sound. (3)

Second semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 21 is to be taken concurrently.

(Sucher.)

Phys. 60. Intermediate Physics Experiments. (2 credits per semester)

Four hours of laboratory work per week. Prerequisite, Phys. 11 or 21 or concurrent enrollment in Phys. 17 or Phys. 18. Laboratory fee, \$10.00 per semester. Selected experiments.

(Marion, E. Stern.)

For Advanced Undergraduates and Graduates

Phys. 100. *Advanced Experiments.* (2 credits per semester)

Four hours of laboratory work per week. Prerequisite, four credits of Phys. 60 or consent of instructor. Laboratory fee, \$10.00 per semester. Selected fundamental experiments in electricity and magnetism, elementary electronics, and optics.

(Marion, E. Stern.)

Phys. 101. *Laboratory Arts.*

(Will be given only with sufficient demand.) Three hours laboratory a week for each credit hour. One or more credits may be taken concurrently. Prerequisite, Phys. 100 or consent of instructor. Laboratory fee, \$10.00 per credit hour.

(Marion.)

Phys. 102. *Optics.* (3)

Second semester. Three lectures a week. Prerequisites, Phys. 11 or 21 and Math. 21. It is suggested, but not required, that Phys. 60 or Phys. 100 be taken concurrently with this course. Geometrical optics, optical instruments, wave motion, interference and diffraction, and other phenomena in physical optics.

(Zipoy.)

Phys. 103. *Applied Optics.* (3)

First semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 102. A detailed study of physical optics and its applications.

(Morgan.)

Phys. 104, 105. *Electricity and Magnetism.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Phys. 11 or 21; Math. 21. Electrostatics, direct current and alternating current circuitry, electromagnetic effects of steady currents, electromagnetic induction, radiation, development of Maxwell's equations, Poynting vector, wave equations, and electronics.

(Kasner.)

Phys. 106, 107. *Theoretical Mechanics.* (3, 3)

First and second semesters. Three lectures a week. Prerequisite, Phys. 51 or consent of instructor. A detailed study of Newtonian mechanics. Dynamics, the motion of rigid bodies, oscillation problems, etc., are studied. Lagrange's equation of the first kind and the Hamilton-Jacobi equation are introduced.

(Singer.)

Phys. 108. *Physics of Electron Tubes.* (3)

First semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 104 must be taken previously or concurrently. A study of the electromagnetic principles relevant to electron tubes and of their applications.

(Steinberg.)

Phys. 109. *Electronic Circuits.* (4)

Second semester. Four lectures a week. Prerequisite, Phys. 105 must be taken previously or concurrently. Theory of physics detectors and pulse circuits. Application in circuit design.

(Detenbeck.)

Phys. 110. *Special Laboratory Projects in Physics.* (1, 2, or 3)

Two hours laboratory work a week for each credit hour. One to three credits may be taken concurrently, each semester. (Will be given only with sufficient demand.) Prerequisite, Phys. 100 and consent of adviser. Laboratory fee, \$10.00 per credit hour. Selected advanced experiments.

(Staff.)

Physics

Phys. 111. Physics Shop Techniques. (1)

First semester. One three-hour laboratory per week. Prerequisite, Phys. 100 or consent of instructor. Laboratory fee, \$10.00. Machine tools, design and construction of laboratory equipment. (Horn.)

Phys. 114, 115. Introduction to Biophysics. (2, 2)

First and second semesters. (Will be given only with sufficient demand.) Two lectures a week. Prerequisites, intermediate physics and Math. 21. A study of the physical principles involved in biological processes, with particular emphasis on current research in biophysics. (Britten.)

Phys. 116, 117. Fundamental Hydrodynamics. (3, 3)

Three lectures a week. Prerequisites, Phys. 106 and Math. 21. Kinematics of fluid flow, properties of incompressible fluids, complex variable methods of analysis, wave motions. (Hama.)

Phys. 118. Introduction to Modern Physics. (3)

First semester. Three lectures a week. Prerequisites, general physics and integral calculus, with some knowledge of differential equations and a degree of maturity as evidenced by having taken one or more of the courses Phys. 50 through Phys. 110. Introductory discussion of special relativity, origin of quantum theory, Bohr atom, wave mechanics, atomic structure, and optical spectra. (Hornyak, Boyd.)

Phys. 119. Modern Physics. (3)

Second semester. Three lectures a week. Prerequisite, Phys. 118. A survey of nuclear physics, x-rays, radioactivity, wave mechanics, and cosmic radiation. (Rodberg.)

Phys. 120. Nuclear Physics. (4)

Second semester. Four lectures a week. Prerequisite, Phys. 118 or equivalent. Shell model, liquid drop model, statistical model of nuclei, interaction of radiation and charged particles with matter, nuclear reactors, conservation laws, beta decay and other selected topics. (Detenbeck, Hornyak.)

Phys. 121. Neutron Physics and Fission Reactors. (4)

Second semester. Four lectures a week. Prerequisite, Phys. 120. Neutron diffusion and reactor physics. (Shapiro.)

Phys. 122. Properties of Matter. (4)

First semester. Four lectures a week. Prerequisite, Phys. 118 or equivalent. Thermal, elastic, and electromagnetic properties of solids. Characteristics of fluids, and high polymer physics. (Horsfall.)

Phys. 124. Introduction to Astrophysics and Geophysics. (3)

First semester. Three lectures a week. Prerequisite, Phys. 118 or consent of instructor. Celestial mechanics, orbit theory, upper atmosphere physics, astronomical spectroscopy, motions of charged particles in the earth's magnetic field. (Opik.)

Phys. 126. Kinetic Theory of Gases. (3)

Three lectures a week. Prerequisites, Phys. 107 and Math. 21. Dynamics of gas particles, Maxwell-Boltzmann distribution, diffusion, Brownian motion, etc. (Mason.)

Phys. 130, 131. Basic Concepts of Physics. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, junior standing. Lecture demonstration fee, \$2.00 per semester. A primarily descriptive course intended mainly for those students in the liberal arts who have not had any other course in physics. This course does not satisfy the requirements of professional schools nor serve as a prerequisite or substitute for other physics courses. The main emphasis in the course will be on the concepts of physics, their evolution and their relation to other branches of human endeavor. (Laster.)

Phys. 140, 141. Atomic and Nuclear Physics Laboratory. (3, 3)

One lecture and four hours of laboratory a week. Prerequisites, two credits of Phys. 100 and consent of instructor. Laboratory fee, \$10.00 per semester. Classical experiments in atomic physics and more sophisticated experiments in current techniques in nuclear physics. Enrollment is limited to ten students. (Detenbeck, Marion.)

Phys. 150. Special Problems in Physics.

Given each semester. Prerequisite, major in physics and consent of adviser. Research or special study. Credit according to work done. Laboratory fee, \$10.00 per credit hour when appropriate. (Staff.)

Phys. 190. Independent Studies Seminar.

Credit according to work done, each semester. Enrollment is limited to students admitted to the Independent Studies Program in Physics. (Staff.)

For Graduates

Of the courses which follow, 200, 201, 212, 213, 234, 235, 237 and 258 are given every year; all others will be given according to demand.

Phys. 200, 201. Introduction to Theoretical Physics. (6, 6)

First and second semesters. Six lecture hours per week. Prerequisite, Phys. 106 or consent of instructor. This basic course for graduate study in physics covers advanced classical mechanics, electrodynamics, relativity, thermodynamics, and statistical mechanics. (Iskraut, Myers.)

Phys. 202, 203. Advanced Dynamics. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, Phys. 200. A detailed study of advanced classical mechanics. (Iskraut, Myers.)

Phys. 204. Electrodynamics. (4)

Four lectures a week. Prerequisite, Phys. 201. A detailed study of advanced classical electrodynamics. (Griem.)

Phys. 208. Thermodynamics. (3)

First semester. Three lectures per week. Prerequisite, Phys. 201. The first and second laws of thermodynamics are examined and applied to homogeneous and non-homogeneous systems, calculations of properties of matter, the derivation of equilibrium condition and phase transitions, the theory of irreversible processes. (Schamp.)

Phys. 210. Statistical Mechanics. (3)

Second semester. Three lectures a week. Prerequisites, Phys. 119 and Phys. 201. A study of the determination of microscopic behavior of matter from microscopic models. Microcanonical, canonical, and grand canonical models. Applications to solid state physics and the study of gases. (Weiss.)

Physics

Phys. 212, 213. Introduction to Quantum Mechanics. (4, 4)

First and second semesters. Four lectures per week. Prerequisite, Phys. 200 or an outstanding undergraduate background in physics. A study of the Schroedinger equation, matrix formulations of quantum mechanics, approximation methods, scattering theory, etc., and applications to solid state, atomic, and nuclear physics.

(Day, Rodberg, Ferrell.)

Phys. 214. Theory of Atomic Spectra. (3)

First semester. Three lectures a week. Prerequisite, Phys. 213. A study of atomic spectra and structure—one and two electron spectra, fine and hyperfine structure, line strengths, line widths, etc.

(Boyd, Kasner.)

Phys. 215. Theory of Molecular Spectra. (3)

Second semester. Three lectures a week. Prerequisite, Phys. 214. The structure and properties of molecules as revealed by rotational, vibrational, and electronic spectra.

(Boyd, Kasner.)

Phys. 216, 217. Molecular Physics. (2, 2)

Two lectures a week. Prerequisite, Phys. 213. Molecular theory of gases and liquids, ensemble theory, analysis of empirical models for molecular interactions, theory of Coulomb interactions between charge distribution.

(Mason.)

Phys. 218, 219. X-Rays and Crystal Structure. (3, 3)

Three lectures per week. Prerequisite, Phys. 201. A detailed study of crystal structure of solids and of x-rays.

(Morgan.)

Phys. 220. Application of X-Ray and Electron Diffraction Methods. (2)

Two laboratory periods a week. Prerequisite, concurrent enrollment in Phys. 218. The investigation of crystal structure, using x-rays and electron diffraction.

(Morgan.)

Phys. 221. Upper Atmosphere and Cosmic Ray Physics. (2)

Second semester. Two lectures a week. Prerequisite, Phys. 200 or consent of instructor. Structure of the atmosphere, rocket and satellite experiments, primary and secondary cosmic rays, origins of cosmic rays, geomagnetic theory.

(Singer.)

Phys. 222, 223. Boundary-Value Problems of Theoretical Physics. (2, 2)

Prerequisite, Phys. 201.

(Prats.)

Phys. 224, 225. Supersonic Aerodynamics and Compressible Flow. (2, 2)

Two lectures a week. Prerequisite, Phys. 201.

(Pai.)

Phys. 226, 227. Theoretical Hydrodynamics. (3, 3)

Three lectures a week. Prerequisite, Phys. 201. A detailed study of advanced fluid dynamics.

(Burgers.)

Phys. 230. Seminar.

Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One credit for each seminar each semester.

(Staff.)

Phys. 231. Applied Physics Seminar.

(One credit for each semester.)

(Staff.)

Phys. 232, 233. Hydromechanics Seminar. (1, 1)

First and second semesters. One meeting a week.

(Staff.)

Phys. 234, 235. Theoretical Nuclear Physics. (3, 3)

Three lectures a week. Prerequisites, Phys. 120 and Phys. 213. Nuclear properties and reactions, nuclear forces, two, three, and four body problems, nuclear spectroscopy, beta-decay, and related topics. (Ferrell, MacDonald.)

Phys. 236. Theory of Relativity. (3)

Three lectures a week. Prerequisite, Phys. 200. A study of Einstein's special theory of relativity and some consequences, and a brief survey of the foundations of general relativity. (Weber.)

Phys. 237. Relativistic Quantum Mechanics. (3)

First semester. Three lectures a week. Prerequisite, Phys. 213. Classical field theory, Klein-Gordon and Dirac equations, invariance properties, second quantization, renormalization, and related topics. (Sucher.)

Phys. 238. Quantum Theory—Selected Topics. (3)

Three lectures a week. Prerequisite, Phys. 237. (Staff.)

Phys. 239. Elementary Particles. (3)

Three lectures a week. Prerequisite, Phys. 237. Survey of elementary particles and their properties, quantum field theory, meson theory, weak interactions, possible extensions of elementary particle theory. (Day, Snow.)

Phys. 240, 241. Theory of Sound and Vibrations. (3, 3)

Three lectures a week. Prerequisite, Phys. 201. A detailed study of acoustics and the theory of vibrations. (Hama.)

Phys. 242, 243. Theory of Solids. (3, 3)

First and second semesters. Two lectures a week. Prerequisite, Phys. 213. Properties of metals, lattice vibrations and specific heats, Boltzmann, Fermi-Dirac, and Bose-Einstein statistics, free electron gas theories, band theory of metals. (Ferrell, Myers.)

Phys. 245. Special Topics in Applied Physics.

(2 credits each semester.) Two lectures a week. (Staff.)

Phys. 246, 247. Special Topics in Fluid Dynamics. (2, 2)

Prerequisites, advanced graduate standing and consent of the instructor. (Burgers.)

Phys. 248, 249. Special Topics in Modern Physics. (2, 2)

Two lectures a week. Prerequisite, consent of instructor. (Staff.)

Phys. 258. Quantum Field Theory. (3)

Second semester. Three lectures a week. Prerequisite, Phys. 237. S-matrix, Feynman diagrams, scattering theory, renormalization, conservation laws, dispersion relations, and recent non-perturbation approaches to field theory. (Toll.)

Phys. 260. High Energy Physics. (3)

Three lectures a week. Prerequisite, Phys. 237. Nuclear forces are studied by examining interactions at high energies. Meson physics, scattering processes, and detailed analysis of high energy experiments. (Snow, Steinberg.)

Phys. 262, 263. Aerophysics. (3, 3)

Three lectures. Prerequisite, consent of the instructor. (Pai.)

Physics, Psychology

Phys. 399. *Research.*

Credit according to work done, each semester. Laboratory fee, \$10.00 per credit hour. Prerequisite: an approved application for admission to candidacy or special permission of the Physics Department. (Staff.)

Special Physics Courses For High School Science Teachers

The courses in this section were especially designed for high school teachers and are not applicable to B.S., M.S., or Ph.D. degrees in physics without special permission of the Physics Department. However, these courses can be included as part of a physics minor or as electives. No prerequisites are required.

Phys. 118A. *Atoms, Nuclei, and Stars.* (3)

Three lectures per week. An introduction to basic ideas of the constitution and properties of atomic and subatomic systems and of the overall structure of the universe. (Iskraut.)

Phys. 122A. *Properties of Materials.* (3)

Three lectures per week. An introduction to the study of solid state physics and the properties of fluids. (E. Stern.)

Phys. 160A. *Physics Problems.* (1, 2, or 3)

Lectures and discussion sessions arranged. (Laster.)

Phys. 170A. *Applied Physics.* (3)

Three lectures per week. (Hornyak.)

Phys. 199. *National Science Foundation Summer Institute for Teachers of Science Seminar.* (1)

Arranged during summer session. Enrollment limited to participants in the N.S.F. Summer Institute. Laboratory fee \$5.00. (Laster, Staff.)

PSYCHOLOGY

Professor and Head: ANDREWS.

Professors: MC GINNIES AND VERPLANCK.

Associate Professors: MAGOON AND ROSEN.

Assistant Professors: ANDERSON, CLINE, GOLLUB, HEERMANN, PUMROY AND YARCZOWER.

Lecturer: BRADY.

Students who are interested in the Honors Program of the Department should arrange to discuss this program and their eligibility for it with the Head of the Department.

Psych. 1. *Introduction to Psychology.* (3)

First and second semesters. This course may be taken as Elective Group I of the American Civilization Program. A basic introductory course, intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution. (McGinnies, Gollub, Yarczower.)

Psych. 2. Applied Psychology. (3)

First and second semesters. Prerequisite, Psych. 1. Application of research methods to basic human problems in business and industry in the professions, and in other practical concerns of everyday life. (Heermann, Anderson.)

Psych. 4. Problems in Modern Psychology. (3)

First and second semesters. Prerequisite, Psych. 1. Primarily for students in the College of Arts and Sciences who major or minor in psychology. A systematic survey of the field of psychology with particular emphasis on methodology. Consideration of individual differences, motivation, sensory and motor processes, learning, emotional behavior and personality. (Staff.)

Psych. 5. Mental Hygiene. (3)

First and second semesters. Prerequisite, Psych. 1. Introduction to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it. (Staff.)

Psych. 21. Social Psychology. (3)

First and second semesters. Prerequisite, Psych. 1. Personality and behavior as influenced by culture and interpersonal relations. Social influences on motivation, learning, memory, and perception. Attitudes, public opinion, propaganda, language and communication, leadership, ethnic differences, and group processes. (McGinnies, Cline.)

Psych. 25. Child Psychology. (3)

First semester. Prerequisite, Psych. 1. Behavioral analysis of normal development and normal socialization of the growing child. Leading theories of child nature and care, and their implications. (Pumroy, Rosen.)

Psych. 26. Developmental Psychology. (3)

First semester. Prerequisite, Psych. 1. Genetic approach to human motivation and accomplishment. Research on simpler animal forms, the child, the adolescent and the adult in terms of the development of normal adult behavior. (Brady.)

For Advanced Undergraduates and Graduates

Graduate credits will be assigned only for students certified by the Department of Psychology as qualified for graduate standing.

Psych. 106. Statistical Methods in Psychology. (3)

First and second semesters. Prerequisites, Psych. 1 and Math. 1, 5, or 10 or equivalent. A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. Majors in psychology should take this course in the junior year. (Anderson, Gollub, Heermann.)

Psych. 110. Educational Psychology. (3)

Prerequisite, Psych. 1 or equivalent. Researches on fundamental psychological problems encountered in education. Measurement and significance of individual differences; learning, motivation, transfer of training, and the educational implications of theories of intelligence. (Staff.)

Psychology

Psych. 122. Advanced Social Psychology. (3)

Second semester. Prerequisites, Psych. 21, senior standing, and consent of instructor. A systematic review of researches and points of view in regard to major problems in the field of social psychology. (McGinnies, Cline.)

Psych. 123. Language and Social Communication. (3)

Second semester. Prerequisite, Psych. 21, senior standing, and consent of instructor. The nature and significance of verbal and non-verbal communication in social psychological processes, including examination of relevant theoretical approaches to symbolic behavior. (McGinnies.)

Psych. 128. Human Motivation. (3)

First and second semesters. Prerequisite, Psych. 21. Review of research literature dealing with determinants of human performance, together with consideration of the major theoretical contributions in this area. (Cline, Yarczower.)

Psych. 131. Abnormal Psychology. (3)

First and second semesters. Prerequisite, two courses in psychology, including Psych. 5. The nature, diagnosis, etiology, and treatment of mental disorders. (Pumroy, Rosen.)

Psych. 136. Applied Experimental Psychology. (3)

Second semester. Prerequisite, Psych. 1 or consent of instructor. A study of basic human factors involved in the design and operation of machinery and equipment. Organized for students in engineering, industrial psychology, and the biological sciences. (Anderson.)

Psych. 140. Psychological Problems in Advertising. (3)

Second semester. Prerequisite, Psych. 1. Psychological problems that arise in connection with the production and testing of advertising; techniques employed in attacking these problems through research. (Staff.)

Psych. 142. Techniques of Interrogation. (3)

First and second semesters. Prerequisite, Psych. 21. The interview, the questionnaire, and other methods of obtaining evidence on human attitudes and reactions, as viewed in the light of modern research evidence. (Anderson, Cline.)

Psych. 145. Introduction to Experimental Psychology. (4)

First and second semesters. Two lectures and two two-hour laboratory periods per week. Prerequisite, Psych. 106. Laboratory fee per semester, \$4.00. Primarily for students who major or minor in psychology. A systematic survey of the laboratory methods and techniques as applied to human behavior. Emphasis is placed on individual and group participation in experiments, use of data, and preparation of reports. (Yarczower, Gollub.)

Psych. 148. Psychology of Learning. (3)

First semester. Prerequisite, Psych. 145. Review and analysis of the major phenomena and theories of human and animal learning, including an introduction to the fields of problem solving, thinking and reasoning behavior. (Gollub, Yarczower.)

Psych. 150. Tests and Measurements. (3)

Second semester. Prerequisite, Psych. 106. Laboratory fee, \$4.00. Critical survey of measuring devices used in counseling, educational and industrial practice with an emphasis on the theory, development and standardization. Laboratory practice in the administration and interpretation of a variety of commonly used tests is provided. (Staff.)

Psych. 161. Industrial Psychology. (3)

Second semester. Prerequisite, 6 hours in psychology. A course designed to aid in the understanding of the problems of people in a variety of work situations; serving as an introduction to such technical problems as personnel selection, interviewing, morale, supervision and management, and human relations in industry. Lecture, discussion and laboratory. (Heermann.)

Psych. 180. Physiological Psychology. (3)

First semester. Prerequisite, Psych. 145. An introduction to research on the physiological basis of human behavior, including considerations of sensory phenomena, motor coordination, emotion, drives, and the neurological basis of learning. (Brady, Gollub.)

Psych. 181. Animal Behavior. (3)

(Same as Zool. 181). Second semester. Prerequisite, consent of instructor. A study of animal behavior, including considerations of social interactions, learning, sensory processes, motivation, and experimental methods, with a major emphasis on mammals. (Verplanck.)

Psych. 194. Independent Study in Psychology. (1-3)

First and second semesters. Prerequisites, senior standing and written consent of individual faculty supervisor. Integrated reading under direction, leading to the preparation of an adequately documented report on a special topic. (Staff.)

Psych. 195. Minor Problems in Psychology. (1-3)

First and second semesters. Prerequisite, written consent of individual faculty supervisor. An individualized course designed to allow the student to pursue a specialized topic or research project under supervision. (Staff.)

For Graduates

(All the following courses require consent of the instructor. Descriptions are given in the Graduate School Catalog.)

Psych. 200. Proseminar: Professional Aspects of Psychological Science. (2)

Second semester. Prerequisite, consent of faculty adviser. Survey of professional problems in psychology, including considerations of contemporary developments, professional ethics, literature resources, formulation of critical research problems, and discussion of the major institutions requiring psychological services. (Staff.)

Psych. 201. Sensory Processes. (3)

Second semester. Prerequisite, Psych. 180 and 211.

Psych. 202. Perception. (3)

First semester. Prerequisite, Psych. 211. (Andrews.)

Psych. 203, 204. Graduate Seminar. (3, 3)

First and second semesters. (Staff.)

Psych. 205, 206. Historical Viewpoints and Current Theories in Psychology. (3, 3)

First and second semesters. (Verplanck.)

Psych. 207. Learning Theory. (3)

Second semester. Prerequisite, Psych. 212. (Verplanck, Yarczower.)

Psychology

- Psych. 208. Language and Thought. (3)*
First semester. Prerequisite, Psych. 212. (Verplanck.)
- Psych. 211, 212. Advanced General Psychology. (3, 3)*
First and second semesters. Prerequisite, Psych. 145. (Staff.)
- Psych. 220. Psychological Concepts in Mental Health. (3)*
Second semester. (Magoon, Rosen.)
- Psych. 221. Seminar in Counseling Psychology. (3)*
(Magoon.)
- Psych. 222. Seminar in Clinical Psychology. (3)*
Prerequisites, Psych. 150, 220. (Rosen, Pumroy.)
- Psych. 223. Diagnosis and Correction of Reading Difficulties. (3)*
Second semester. Prerequisites, Psych. 150, 220. (Staff.)
- Psych. 224. Advanced Procedures in Clinical and Counseling Psychology. (3)*
(Staff.)
- Psych. 225, 226. Practicum in Counseling and Clinical Procedures. (1-3, 1-3)*
First and second semesters. (Magoon, Pumroy.)
- Psych. 227. Occupational Development and Choice. (3)*
Alternate years. Prerequisite, Psych. 220 and permission of instructor. (Staff.)
- Psych. 228 (Same as Ed. 228). Seminar in Student Personnel. (2)*
First semester. Prerequisite, permission of instructor. (Byrne, Magoon.)
- Psych. 229. Advanced Industrial Psychology. (3)*
First semester. Prerequisite, Psych. 161 or equivalent. (Heermann.)
- Psych. 230. Determinants of Human Performance. (3)*
Second semester. (Anderson, Yarczower.)
- Psych. 231. Training Procedures in Industry. (3)*
Second semester. Prerequisite, Psych. 148 or equivalent. (Staff.)
- Psych. 232. Personnel Selection and Job Analysis. (3)*
First semester. (Heermann.)
- Psych. 233. Social Organization in Industry. (3)*
First semester. Prerequisite, Psych. 229 or equivalent. (Staff.)
- Psych. 240. Interview and Questionnaire Techniques. (3)*
Second semester. (Anderson, Cline.)
- Psych. 241. Mass Communication and Persuasion. (3)*
Second semester. (McGinnies.)
- Psych. 242. Seminar in Social Psychology. (3)*
Second semester. (McGinnies.)

- Psych. 250. Mental Test Theory.* (3)
First semester. Prerequisite, **Psych. 253.** (Staff.)
- Psych. 251. Development of Predictors.* (3)
First semester. Prerequisite, **Psych. 253.** (Andrews.)
- Psych. 252, 253. Advanced Statistics.* (3, 3)
First and second semesters. Prerequisite, **Psych. 106.**
(Andrews, Anderson, Heermann.)
- Psych. 254. Factor Analysis.* (3)
First semester. Prerequisite, **Psych. 253.** (Andrews.)
- Psych. 255. Seminar in Psychometric Theory.* (3)
Prerequisite, **Psych. 253.** (Andrews, Anderson.)
- Psych. 260. Individual Tests.* (3)
Prerequisite, **Psych. 150.** Laboratory fee, \$4.00. (Magoon, Pumroy.)
- Psych. 262. Appraisal of Personality.* (3)
Prerequisite, **Psych. 150.** (Rosen.)
- Psych. 263. Research Methods in Psychodynamics.* (3)
Alternate years. Prerequisite, **Psych. 222** and permission of instructor. (Rosen.)
- Psych. 264. Projective Tests.* (3)
Second semester. Prerequisite, **Psych. 260.** Laboratory fee, \$4.00. (Pumroy.)
- Psych. 265. Advanced Developmental Psychology.* (3)
(Rosen, Pumroy.)
- Psych. 266, 267. Theories of Personality and Motivation.* (3, 3)
First and second semesters. (Verplanck, Rosen.)
- Psych. 268, 269. Advanced Practicum in Counseling and Clinical Procedures.*
(1-3, 1-3)
First and second semesters. Prerequisite, **Psych. 226** and consent of instructor.
(Magoon, Pumroy.)
- Psych. 270. Advanced Abnormal Psychology.* (3)
Prerequisite, **Psych. 131.** (Rosen.)
- Psych. 271. Special Testing of Disabilities.* (3)
Prerequisite, **Psych. 260.** (Magoon.)
- Psych. 272, 273. Individual Clinical Diagnosis.* (3, 3)
Prerequisite, **Psych. 264.** (Rosen.)
- Psych. 280. Advanced Psychophysiology.* (3)
First semester. (Brady.)
- Psych. 281. Seminar in Psychopharmacology.* (3)
Alternate years. Prerequisite, one year of graduate study in psychology and consent of instructor. (Brady.)

Sociology

Psych. 288, 289. *Special Research Problems.* (1-3)

First and second semesters.

(Staff.)

Psych. 399. *Research for Thesis.* (Credit arranged)

First and second semesters.

(Staff.)

SOCIOLOGY

Professor and Head: HOFFSOMMER.

Professors: LEJINS AND MELVIN.

Associate Professor: SHANKWEILER.

Assistant Professors: ANDERSON, COATES, CUSSLER, DI BELLA, FRANZ, HIRZEL,
MC ELHENIE AND MOTZ.

Instructors: SCHMIDT, BITTINGER (P.T.), BOURDEAU (P.T.), DESHON, DOWELL
(P.T.), LAWS (P.T.), MARCHES (P.T.), TOLAND (P.T.) AND WILSON (P.T.).

Sociology 1 or its sociology equivalent is prerequisite to all other courses in sociology excepting Soc. 5.

Sociology 1, 2, 183, 186 and 196 or their equivalent are required for an undergraduate major in sociology.

Soc. 1. Sociology of American Life. (3)

First and second semesters. Summer session. This course is one of a group of four courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the program (provided the student has not taken the course as his Group I elective). Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

(Hoffsommer, Staff.)

Soc. 2. Principles of Sociology. (3)

First and second semesters. Prerequisites, Soc. 1 and sophomore standing. The basic forms of human association and interaction; social processes; institutions; culture; human nature and personality.

(Cussler, Motz, Franz.)

Soc. 5. Anthropology. (3)

First semester. This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. Introduction to anthropology; origins of man; development and transmission of culture; backgrounds of human institutions.

(Anderson.)

Soc. 13. Rural Sociology. (3)

First semester. Rural life in America; its people, social organization, culture patterns, and problems.

(Hoffsommer, Hirzel.)

Soc. 14. Urban Sociology. (3)

Second semester. Urban growth and expansion; characteristics of city populations; urban institutional and personality patterns; relations of city and country. (Schmidt.)

Soc. 51. Social Pathology. (3)

First semester. Prerequisite, sophomore standing. Personal-social disorganization and maladjustment; physical and mental handicaps; economic inadequacies; programs of treatment and control. (Shankweiler, Franz.)

Soc. 52. Criminology. (3)

Second semester. Prerequisite, sophomore standing. Criminal behavior and the methods of its study; causation; typologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime. (Lejins.)

Soc. 62. Social Institutions. (3)

Second semester. Prerequisite, sophomore standing. Nature and function of social institutions; the perpetuation of behavior through customs and social norms; typical contemporary American institutions. (Melvin.)

Soc. 64. Courtship and Marriage. (3)

First and second semesters. Prerequisite, Soc. 1 and sophomore standing. A sociological study of courtship and marriage including consideration of physiological and psychological factors. Inter-cultural companions and practical consideration. Designed for students in the lower division. (Shankweiler, Motz, Bourdeau.)

Soc. 71. Dynamics of Social Interaction. (3)

Prerequisite, Soc. 1 or equivalent. Social psychology of groups like committees, teams, clubs, sects, social movements, crowds and publics. Origin of the social self: role behavior, inter-group and intra-group relations. (Staff.)

For Advanced Undergraduates and Graduates

Sociology 1 or its sociology equivalent and junior standing are prerequisite to courses numbered 100 to 199.

Soc. 102. Intercultural Sociology. (3)

First semester. Prerequisite, Soc. 2. On the basis of a comparative study of customs, individual and group behavior patterns and institutions, this course studies the ideologies of America and other modern societies. The analysis focuses on the nature of the social processes and group behavior of various peoples having or not having a written language. (Melvin.)

Soc. 105. Cultural Anthropology. (3)

Second semester. A survey of the simpler cultures of the world, with attention to historical processes and the application of anthropological theory to the modern situation. (Anderson.)

Soc. 106. Archeology. (3)

Second semester. A survey of human cultural developments as revealed by archeological methods, with materials to be drawn from selected areas of both Old and New Worlds. (Anderson.)

Soc. 111. Sociology of Occupations and Careers. (3)

First semester. The sociology of work and occupational life in modern society. Changing occupational ideologies, values and choices. Occupational status systems and occupational mobility. The social psychology of career success. (Coates.)

Sociology

Soc. 112. Rural-Urban Relations. (3)

First semester. The ecology of population and the forces making for change in rural and urban life; migration, decentralization and regionalism as methods of studying individual and national issues. Applied field problems. (Cussler.)

Soc. 113. The Rural Community. (3)

Second semester. A detailed study of rural life with emphasis on levels of living, the family, school, and church and organizational activities in the fields of health, recreation, welfare, and planning. (Hoffsommer, Hirzel.)

Soc. 114. The City. (3)

First semester. The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control and planning. (Cussler.)

Soc. 115. Industrial Sociology. (3)

First and second semesters. The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community, and society. (Coates.)

Soc. 116. Military Sociology. (3)

First and second semesters. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military service as an occupation or profession. The sociology of military life. Relations between military institutions, civilian communities and society. (Coates.)

Soc. 118. Community Organization. (3)

First semester. Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects. (DiBella, McElhenic.)

Soc. 121. Population. (3)

First semester. Population distribution and growth in the United States and the world; population problems and policies. (Hirzel.)

Soc. 122. Population. (3)

Second semester. Trends in fertility and mortality, migrations, population estimates and the resulting problems and policies. (Hirzel.)

Soc. 123. Ethnic Minorities. (3)

First semester. Basic social processes in the relations of ethnic groups within the State; immigration groups and the Negro in the United States; ethnic minorities in Europe. (Lejins.)

Soc. 124. The Culture of the American Indian. (3)

Second semester. A study of type cultures; cultural processes; and the effects of acculturation on selected tribes of Indians in the Americas. (Anderson.)

Soc. 125. Cultural History of the Negro. (3)

First semester. The cultures of Africa south of the Sahara and the cultural adjustments of the Negro in North and South America. (Anderson.)

Soc. 131. Introduction to Social Service. (3)

First and second semesters. General survey of the field of social-welfare activities; historical development; growth, functions, and specialization of agencies and services, private and public. (DiBella, McElhenie.)

Soc. 136. Sociology of Religion. (3)

First semester. Varieties and sources of religious experience. Religious institutions and the role of religion in social life. (Anderson.)

Soc. 141. Sociology of Personality. (3)

First semester. Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior. (Motz, Cussler, Schmidt.)

Soc. 144. Collective Behavior. (3)

Second semester. Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public. (Cussler.)

Soc. 145. Social Control. (3)

First semester. Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society. (Motz.)

Soc. 147. Sociology of Law. (3)

First semester. Law as a form of social control; interrelation between legal and other conduct norms as to their content, sanctions, and methods of securing conformity; law as an integral part of the culture of the group; factors and processes operative in the formation of legal norms as determinants of human behavior. (Lejins.)

Soc. 153. Juvenile Delinquency. (3)

First semester. Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention. (Lejins, Wilson.)

Soc. 154. Crime and Delinquency Prevention. (3)

Second semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. (Offered in alternate years with Soc. 156.) Mobilization of community resources for the prevention of crime and delinquency; area programs and projects. (Lejins.)

Soc. 156. Institutional Treatment of Criminals and Delinquents. (3)

Second semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. (Offered in alternate years with Soc. 154.) Organization and functions of penal and correctional institutions for adults and juveniles. (Lejins.)

Soc. 161. The Sociology of War. (3)

Second semester. The origin and development of armed forces as institutions; the social causes, operations and results of war as social conflict; the relations of peace and war and revolution in contemporary civilization. (Coates.)

Soc. 162. Basic Principles and Current Practice in Public Welfare. (3)

Summer Session only. (DiBella, McElhenie.)

Sociology

Soc. 164. The Family and Society. (3)

Second semester. Prerequisite, Soc. 1 and Soc. 64 or equivalent. Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present day trends. (Shankweiler, Motz.)

Soc. 166. Interviewing and Problem Solving in Social Work. (3)

Prerequisite, Soc. 131 (may be taken concurrently). The principles of interviewing and other diagnostic techniques as applied to social problems with particular reference to family and child behavior. (McElhenie, DiBella.)

Soc. 171. Family and Child Welfare. (3)

First semester. Programs of family and child welfare agencies; social services to families and children; child placement; foster families. (DiBella.)

Soc. 173. Social Security. (3)

First semester. The social security program in the United States; public assistance; social insurance. (DiBella.)

Soc. 174. Public Welfare. (3)

Second semester. Development and organization of the public welfare movement in the United States, social legislation interrelations of federal, state, and local agencies and institutions. (DiBella.)

Soc. 180. Small Group Analysis. (3)

Analysis of small group structure and dynamics. Review of research on small groups in factories, military service, schools and communities. Presentation of techniques used in the study of small groups. (Franz.)

Soc. 183. Social Statistics. (3)

First and second semesters. Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation. Majors in sociology should take this course in their junior year. (Schmidt.)

Soc. 185. Advanced Social Statistics. (3)

Second semester. Prerequisite, Soc. 183, or equivalent. Provides refined statistical research methods for advanced students in the social sciences. Sampling theory, specialized correlation technique, advanced tests of significance, and other procedures. (Schmidt.)

Soc. 186. Sociological Theory. (3)

First and second semesters. Development of the science of sociology; historical backgrounds; recent theories of society. Majors in sociology should take this course in their senior year. (Melvin, Hirzel.)

Soc. 191. Social Field Training. (1-3)

First and second semesters. Prerequisites, for social work field training, Soc. 131; for crime control field training, Soc. 52 and 153. Enrollment restricted to available placements. Supervised field training in public and private social agencies. The student will select his particular area of interest and be responsible to an agency for a definite program of in-service training. Group meetings, individual conferences, and written program reports will be a required part of the course. (Staff.)

Soc. 196. Senior Seminar. (3)

Second semester. Required of and open only to senior majors in sociology. Scope, fields, and research methods of sociology; practical applications of sociological knowledge. Individual study and reports. Sociology majors who expect to graduate in mid-year should take this course in the preceding spring semester. (Hoffsommer.)

For Graduates

Prerequisites for entrance into graduate study leading to an advanced degree with a major in sociology: either (1) an undergraduate major (totaling at least 24 semester hours) in sociology or (2) 12 semester hours of sociology (including 6 semester hours of advanced courses) and 12 additional hours of comparable work in economics, political science, or psychology. Reasonable substitutes for these prerequisites may be accepted in the case of students majoring in other departments who desire a graduate minor or several courses in sociology.

With the exception of Soc. 201, 285, 290, and 291, individual courses numbered 200 to 299 will ordinarily be offered in alternate years.

Soc. 201. Methods of Social Research. (3)

First semester. Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology. (Hoffsommer.)

Soc. 215. Community Studies. (3)

First semester. Intensive study of the factors affecting community development and growth, social structure, social stratification, social mobility and social institutions; analysis of particular communities. (Staff.)

Soc. 216. Sociology of Occupations and Professions. (3)

First semester. An analysis of the occupational and professional structure of American society, with special emphasis on changing roles, functions, ideologies and community-relationships. (Coates.)

Soc. 221. Population and Society. (3)

Second semester. Selected problems in the field of population; quantitative and qualitative aspects; American and world problems. (Hirzel.)

Soc. 224. Race and Culture. (3)

Second semester. Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture. (Anderson.)

Soc. 230. Comparative Sociology. (3)

Second semester. Comparison of the social institutions, organizations, patterns of collective behavior, and art manifestations of societal values of various countries. (Melvin.)

Soc. 241. Personality and Social Structure. (3)

First semester. Comparative analysis of the development of human nature, personality, and social traits in select social structures. (Cussler.)

Sociology

Soc. 246. Public Opinion and Propaganda. (3)

Second semester. Processes involved in the formation of mass attitudes; agencies and techniques of communication; quantitative measurement of public opinion. (Motz.)

Soc. 253. Advanced Criminology. (3)

First semester. Survey of the principal issues in contemporary criminological theory and research. (Lejins.)

Soc. 254. Seminar: Criminology. (3)

Second semester. Selected problems in criminology. (Lejins.)

Soc. 255. Seminar: Juvenile Delinquency. (3)

First semester. Selected problems in the field of juvenile delinquency. (Lejins.)

Soc. 256. Crime and Delinquency as a Community Problem. (3)

Second semester. An intensive study of selected problems in adult crime and juvenile delinquency in Maryland. (Lejins.)

Soc. 257. Social Change and Social Policy. (3)

First semester. Emergence and development of social policy as related to social change; policy-making factors in social welfare and social legislation. (Melvin.)

Soc. 262. Family Studies. (3)

Second semester. Case studies of family situations; statistical studies of family trends, methods of investigation and analysis. (Shankweiler.)

Soc. 263. Marriage and Family Counseling. (3)

Second semester. Prerequisites, Soc. 64 or Soc. 164 or consent of instructor. A sociological analysis of an emerging, family-centered profession: its interdisciplinary development and professional organization: its basic methods of coordinating art and science in solving family problems. Designed for advanced sociology majors or allied fields for use in vocations such as teaching, medicine, the ministry and others embodying the role of guidance. (Shankweiler.)

Soc. 264. The Sociology of Mental Health. (3)

First semester. A study of the sociological factors that condition mental health together with an appraisal of the group dynamics of its preservation. (Melvin.)

Soc. 282. Sociological Methodology. (3)

Second semester. Logic and method of sociology in relation to the general theory of scientific method; principal issues and points of view. (Staff.)

Soc. 285. Seminar: Sociological Theory. (3)

First semester. Critical and comparative study of contemporary European and American theories of society. Required of graduate majors in sociology. (Melvin.)

Soc. 291. Special Social Problems. (Credit to be determined)

First and second semesters. Individual research on selected problems. (Staff.)

Soc. 399. Thesis Research. (Credit to be determined)

First and second semesters. (Thesis Adviser.)

SPEECH AND DRAMATIC ART

Professor and Head: STRAUSBAUGH.

Associate Professors: BATKA, HENDRICKS AND NIEMEYER.

Assistant Professors: AYLWARD, CONLON, DEW, LINKOW, PROVENSEN, PUGLIESE AND STARCHER.

Instructors: ANAPOL, CRAVEN, ELLIS, SCHMITT AND RODGERS.

Assistant Instructors: CORNELL, CREWS, CUSSLER, DUKE, MENSER, MORROW, WAGENER AND WOLFE.

Lecturers: CAUSEY, SHUTTS AND WILLIAMS.

**Speech 1. Public Speaking. (3)*

First and second semesters. Prerequisite for advanced speech courses. Laboratory fee, \$1.00. The preparation and delivery of short original speeches; outside readings; reports, etc. It is recommended that this course be taken during the freshman year.
(Linkow, Staff.)

Speech Clinic. No credit.

Remedial work in minor speech defects. The work of the clinic is conducted in individual conferences and in small group meetings. Hours arranged by consultation with the respective speech instructor.
(Conlon, Staff.)

Speech 3. Fundamentals of General American Speech. (3)

Each semester. Training in auditory discrimination of speech sounds, rhythms and inflections of general American speech. Analysis of the physiological bases of speech production and the phonetic elements of speech reception. This course is required of speech majors, and recommended for foreign students and majors in nursery and elementary education.
(Duke, Staff.)

Speech 4. Voice and Diction. (3)

First and second semesters. Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1.
(Starcher, Staff.)

Speech 5, 6. Advanced Public Speaking. (2, 2)

First and second semesters. Prerequisite, Speech 1, or 7, or 18 and 19. Advanced work on basis of Speech 1. Special emphasis is placed upon speaking situations the students will face in their respective vocations.
(Starcher, Staff.)

**Speech 7. Public Speaking. (2)*

Each semester. Laboratory fee, \$1.00. The preparation and delivery of speeches on technical and general subjects.
(Linkow, Staff.)

Speech 8. Acting. (3)

First and second semesters. Prerequisite, consent of instructor. Basic principles of histrionic practice.
(Rodgers.)

Speech 10. Group Discussion. (2)

First and second semesters. A study of the principles, methods, and types of discussion, and their application in the discussion of contemporary problems.
(Linkow, Staff.)

*Speech 3 should be substituted as the requirement for non-English speaking students.

Speech and Dramatic Art

Speech 11, 12. Debate. (2, 2)

First and second semesters. Pre-Law students may take Speech 11, 12, instead of Speech 1. A study of the principles of argument, analysis, evidence, reasoning, fallacies, briefing, and delivery, together with their application in public speaking. (Anapol.)

Speech 13. Oral Interpretation. (3)

First semester. The oral interpretation of literature and the practical training of students in the art of reading. (Provensen.)

Speech 14. Stagecraft. (3)

First semester. Laboratory fee, \$2.00. Fundamentals of technical production. Emphasis on construction of scenery. (Schmitt.)

Speech 16. Introduction to the Theatre. (3)

First and second semesters. A general survey of the fields of the theatre. (Pugliese.)

Speech 17. Make-up. (2)

Second semester. One lecture and one laboratory period a week. Laboratory fee, \$2.00. A lecture-laboratory course in the theory and practice of stage make-up, covering basic requirements as to age, type, character, race, and period. (Schmitt.)

**Speech 18, 19. Introductory Speech. (1, 1)*

First and second semesters. Speech 18 prerequisite for Speech 19. This course is designed to give those students practice in public speaking who cannot schedule Speech 1. (Provensen, Staff.)

Speech 22. Introduction to Radio and Television. (3)*

First and second semesters. Prerequisite for all courses in radio. The development, scope, and influence of American broadcasting and telecasting, including visits to local radio and television stations, with guest lecturers from Radio Station WTOP and Television Station WTOP-TV. (Batka.)

Speech 23. Parliamentary Law. (1)

First and second semesters. A study of the principles and application of parliamentary law as applied to all types of meetings. Thorough training in the use of Robert's Rules of Order. (Strausbaugh.)

For Advanced Undergraduates and Graduates

Speech 102. Radio Production. (3)

Second semester. Prerequisites, Speech 22 and consent of instructor. Laboratory fee, \$2.00. A study of the multiple problems facing the producer. Special emphasis is given to acoustic setup, casting, "miking," timing, cutting and the coordination of personnel factors involved in the production of radio programs. (Batka.)

Speech 103, 104. Speech Composition and Rhetoric. (3, 3)

First and second semesters. A study of rhetorical principles and models of speech composition in conjunction with the preparation and presentation of specific forms of public address. (Staff.)

*Speech 3 should be substituted as the requirement for non-English speaking students.

Speech 105. Speech-Handicapped School Children. (3)

First and second semesters. Prerequisite, Speech 3 for undergraduates. The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology. (Craven.)

Speech 106. Clinical Practice. (1 to 5 credits, up to 9)

Each semester. Summer session. Prerequisite, Speech 105. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour. Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, veterans hospitals, and the public schools. (Conlon.)

Speech 107. Advanced Oral Interpretation. (3)

Second semester. Prerequisite, Speech 13. Emphasis upon the longer reading. Program planning. (Provensen.)

Speech 109. Speech and Language Development of Children. (3)

Second semester. Admission by consent of instructor. An analysis of normal and abnormal processes of speech and language development in children. (Hendricks.)

Speech 110. Advanced Group Discussion. (3)

First and second semesters. Prerequisite, Speech 10. Required in speech curriculum and elective in other curricula. An examination of current research and techniques in the discussion and conference including extensive practice in this area. (Linkow.)

Speech 111. Seminar. (3)

First and second semesters. Prerequisites, senior standing and consent of instructor. Required of speech majors. Present-day speech research. (Strausbaugh, Staff.)

Speech 112. Phonetics. (3)

First semester. Prerequisite, Speech 3 or consent of instructor. Laboratory fee, \$3.00. Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. (Conlon.)

Speech 113. Play Production. (3)

Second semester. Prerequisite, Speech 16 or consent of instructor. Development of procedure followed by the director in preparing plays for public performance. (Pugliese.)

Speech 114. The Film as an Art Form. (3)

Laboratory fee, \$7.50. A study of the motion picture as a developing form of entertainment, communication, and artistic expression. A series of significant American and foreign films are viewed to illustrate the artistic, historical and sociological trends of the twentieth century. (Niemeyer.)

Speech 115. Radio in Retailing. (3)

First semester. Limited to students in the College of Home Economics. Prerequisite, Speech 1 or 7. Laboratory fee, \$2.00. Writing and production of promotional programs for the merchandising of wearing apparel and housefurnishings. Collaboration with Washington and Baltimore radio stations and retail stores. (Batka.)

Speech and Dramatic Art

Speech 116. Radio Announcing. (3)

Second semester. Prerequisites, Speech 4 and 22 or consent of instructor. Laboratory fee, \$2.00. The theory and application of all types of announcing. (Batka.)

Speech 117. Radio and Television Continuity Writing. (3)

First semester. Prerequisite, Speech 22 or consent of instructor. A study of the principles, methods and limitations of writing for radio and television. Application will be made in the writing of general types of continuities and commercials. (Aylward.)

Speech 119. Radio Acting. (3)

Second semester. Prerequisite, Speech 22. A workshop course designed to give the student practice in radio acting. (Pugliese.)

Speech 120. Speech Pathology. (3)

First semester. Prerequisite, Speech 105. Laboratory fee, \$3.00. A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. (Hendricks.)

Speech 122. Radio Workshop. (3)

First semester. Prerequisite, Speech 102 or 116. Laboratory fee, \$2.00. A laboratory course dealing with all phases of producing a radio program. (Batka.)

Speech 124, 125. American Public Address. (3, 3)

First and second semesters. Prerequisite, Speech 1 or 7. The first semester covers the period from colonial times to the Civil War period. The second semester covers from the Civil War period through the contemporary period. (Anapol.)

Speech 126. Semantic Aspects of Speech in Human Relations. (3)

Second semester. Prerequisite, one course in public speaking. An analysis of speech and language habits from the standpoint of general semantics. (Hendricks.)

Speech 129, 130. Play Directing. (3, 3)

Prerequisite, Speech 8 or consent of instructor. A lecture-laboratory course dealing with the fundamentals of script cutting, pacing, movement, blocking, and rehearsal routine as applied to the directing of plays. (Niemeyer.)

Speech 131. History of the Theatre. (3)

First semester. A survey of dramatic production from early origins to 1800. (Niemeyer.)

Speech 132. History of the Theatre. (3)

Second semester. A survey of dramatic production from 1800 to the present. (Niemeyer.)

Speech 133. Communication Processes in Conferences. (3)

Second semester. Prerequisites, Speech 103 or 104 or the equivalent. Limited to students at the off-campus centers. Group participation in conferences, methods of problem solving, semantic aspects of language and the function of conferences in industry and government. (Linkow.)

Speech 135. Instrumentation in Speech and Hearing Science. (2)

First semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. The use of electronic equipment in the measurement of speech and hearing. (Linkow.)

Speech 136. Principles of Speech Therapy. (3)

Prerequisite, Speech 120. Laboratory fee, \$3.00. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. (Hendricks.)

Speech 138. Methods and Materials in Speech Correction. (3)

Prerequisite, Speech 120 or the equivalent. Laboratory fee, \$3.00. The design and use of methods and materials for diagnosis, measurement, and retraining of the speech-handicapped. (Craven.)

Speech 139. Theatre Workshop. (3)

Given each semester. Prerequisite, Speech 8 or 14. A laboratory course designed to provide the student with practical experience in all phases of theatre production. (Strausbaugh.)

Speech 140. Principles of Television Production. (3)

First semester. Prerequisite, Speech 22. A study of the theory, methods, techniques and problems of television production and direction. Units of study covering television cameras and lenses, lighting theory and practices, scenery and properties, costumes and makeup, graphic arts and special effects are included. Observation of production procedures at nearby television stations. Application will be made through crew assignments for University-produced television programs. (Batka.)

Speech 141. Introduction to Audiometry. (2)

First semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. Analysis of various methods and procedures in evaluating hearing losses. Required for students whose concentration is in speech and hearing therapy. (Craven.)

Speech 142. Speech Reading and Auditory Training. (2)

Second semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. Methods of training individuals with hearing loss to recognize, interpret, and understand spoken language. Required for students whose concentration is in speech and hearing therapy. (Conlon.)

Speech 146. Television News and Public Affairs. (3)

Second semester. Prerequisite, Speech 117 or Journalism 101. Training in presentation of television news, interviews, discussions, and forums. (Batka.)

Speech 147. Analysis of Broadcasting Processes and Results. (2)

First semester. Prerequisite, Speech 22 or consent of instructor. Survey of the more common analytic approaches, methods, and results in the field of radio and television. (Aylward.)

Speech 148. Television Direction. (3)

First semester. Two hour lecture, three hour laboratory. Prerequisites, Speech 22, 140. Laboratory fee, \$10.00. Principles of television direction including analysis of script, casting, rehearsing, production, and video control. (Aylward.)

Speech 149. Television Workshop. (3)

Second semester. Two hour lecture, four hour laboratory. Prerequisites, Speech 22, 140 and 148, or consent of instructor. Laboratory fee, \$10.00. (Aylward.)

Speech 150. Radio and Television Station Management. (2)

Second semester. Prerequisite, Speech 22 or consent of instructor. Broadcasting regulations, licenses, personnel functions, sales, advertising, and program and station promotion. (Batka.)

Speech and Dramatic Art

Speech 161. Ancient Rhetoric. (3)

Second semester. Prerequisite, Speech 5 or 11. The theories of speechmaking and speech composition as propounded by the classical rhetoricians. Special attention is given to Plato, Aristotle, Socrates, Cicero, Quintillian and St. Augustine. (Staff.)

Speech 164. Persuasion in Speech. (3)

Second semester. Prerequisite, Speech 5 or 11. A study of the bases of persuasion with emphasis on recent experimental developments in persuasion. (Anapol.)

Speech 171. Styles and Theories of Acting. (3)

Second semester. Prerequisite, Speech 8 or consent of instructor. The study and application of historical styles and theories of acting. (Niemeyer.)

Speech 175. Stage Design and Lighting. (3)

Second semester. Prerequisite, Speech 14 or consent of instructor. The theory of stage design and lighting. Making of plans and lighting plots as coordinate elements of scenic art. (Schmitt.)

For Graduates

The Department maintains a reciprocal agreement with Walter Reed General Hospital whereby clinical practice may be obtained at the Army Audiology and Speech Correction Center, Forest Glen, Maryland, under the direction of James P. Albrite, M.D., Director.

Speech 201. Special Problems Seminar. (A Through K). (1, 3)

(6 hrs. applicable toward M.A. degree.) Prerequisites, 6 hours in speech pathology and consent of instructor. A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology of Hearing; K. Minor Research Problems. (Hendricks.)

Speech 202. Techniques of Research in Speech and Hearing. (3)

First semester. Prerequisite, 12 hours in speech pathology and audiology. Analysis of research methodology including experimental techniques, statistical analysis and preparation of reports for scientific investigations in speech and hearing science. Required of candidates for Master's degree in speech and hearing therapy. (Williams.)

Speech 203. Experimental Phonetics. (3)

Prerequisite, Speech 112. Laboratory fee, \$3.00. The application of experimental methods in the quantitative analysis of the phonetic elements of speech. (Hendricks.)

Speech 210. Anatomy and Physiology of Speech and Hearing. (3)

Prerequisite, 6 hours in speech pathology and audiology and consent of instructor. Laboratory fee, \$3.00. A study of the anatomy and physiology of the auditory and speech mechanisms. (Gerlach.)

Speech 211. A, B, C, D. Advanced Clinical Practice. (1, 3 up to 12)

(6 hours applicable toward M.A. degree.) Prerequisite, 12 hours in speech pathology and audiology. Laboratory fee, \$1.00 per hour. Supervised training in the application of clinical methods in the diagnosis and treatment of speech and hearing disorders. (Craven.)

Speech 212. Advanced Speech Pathology. (3)

Prerequisites, 6 hours in speech pathology and consent of instructor. Laboratory fee, \$3.00. Etiology and therapy for organic and functional speech disorders. (Lore.)

Speech 214. Clinical Audiometry. (3)

Prerequisites, 3 hours in audiology and consent of instructor. Laboratory fee, \$3.00. Testing of auditory acuity with pure tones and speech. (Shutts.)

Speech 216. Communication Skills for the Hard-of-Hearing. (3)

First semester. Prerequisites, 3 hours in audiology and consent of instructor. Speech reading, auditory training, and speech conservation problems in the rehabilitation of the hard-of-hearing.

Speech 217. Selection of Prosthetic Appliances for the Acoustically Handicapped. (3)

Prerequisite, Speech 214. Laboratory fee, \$3.00. A laboratory course in modern methods of utilizing electronic hearing aids. (Shutts.)

Speech 218. Speech and Hearing in Medical Rehabilitation and Special Education Programs. (3)

Second semester. Prerequisites, 6 hours in speech pathology and audiology and consent of instructor. Administrative problems involved in the organization and operation of speech and hearing therapy under different types of programs. (Hendricks.)

Speech 219. Speech Disorders of the Brain-Injured. (3)

Prerequisites, 6 hours in speech pathology and audiology and consent of instructor. Laboratory fee, \$3.00. Methods of evaluation and treatment of children and adults who have suffered injury to brain tissue, with subsequent damage to speech and language processes. (Hendricks.)

Speech 220. Experimental Audiology. (3)

Second semester. Prerequisite, 6 hours in audiology. Laboratory fee, \$3.00. A study of experimental techniques in the investigation of problems in audiology and psychoacoustics. (Hendricks.)

Speech 221. Communication Theory and Speech and Hearing Problems. (3)

Second semester. Prerequisite, 6 hours in speech pathology and audiology and consent of instructor. Analysis of current theories of communication as they apply to research and therapy in speech and hearing. (Hendricks.)

Speech 240. Seminar in Broadcasting. (3)

First semester. Studies of various aspects of broadcasting. (Aylward.)

Speech 241. Special Problems in Broadcasting. (3)

Second semester. An experimental laboratory course for the development of new ideas in broadcasting. (Batka.)

Speech 260. Speech and Drama Programs in Higher Education. (3)

First semester. A study of current theories and practices in speech education. (Strausbaugh, Staff.)

Speech 261. Introduction to Graduate Study in Speech. (3)

First semester. (Aylward.)

Speech and Dramatic Art, Zoology

Speech 262. Special Problems in General Speech. (3)

First semester.

(Linkow.)

Speech 270. Seminar: Studies in Theatre. (3)

First semester. Research projects adapted to individual backgrounds and special work.
(Staff.)

Speech 271. The Theory of Pre-Modern Dramatic Production. (3)

Second semester. An historical survey of production styles.
(Pugliese.)

Speech 272. Special Problems in Drama. (3)

Second semester. The preparation of adaptations and other projects in dramaturgy.
(Niemeyer.)

Speech 399. Thesis Research. (1-6)

Arranged.

(Staff.)

ZOOLOGY

Professor and Head: WHARTON.

Professors: ANASTOS AND SCHOENBORN.

Professor Emeritus: BURHOE.

Associate Professors: BROWN, GROLLMAN, HALEY, RAMM AND WINN.

Assistant Professors: HIGHTON, LINDER AND STROSS.

Lecturers: BAKER AND CAMIN.

Research Associate: ULMER.

Director, Seafood Processing Laboratory: DUNKER.

All zoology courses with laboratory have a laboratory fee of \$8.00 per course per semester.

Zool. 1. General Zoology. (4)

First and second semesters. Summer session. Two lectures and two two-hour laboratory periods a week. Zool. 1 and Zool. 2 satisfy the freshman pre-medical requirement in general biology. This course, which is cultural and practical in its aim, deals with the basic principles of animal life. Special emphasis is placed on human physiology.
(Linder, Wharton.)

Zool. 2. The Animal Phyla. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1, or Bot. 1. A study of the anatomy, classification, and life histories of representative animals, invertebrates and vertebrates.
(Anastos.)

Zool. 5. Comparative Vertebrate Morphology. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or equivalent. A comparative study of selected organ systems in certain vertebrate groups.
(Ramm.)

Zool. 14. Human Anatomy and Physiology. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1. For students who desire a general knowledge of human anatomy and physiology.
(Grollman.)

Zool. 15. Human Anatomy and Physiology. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 14. A continuation of Zool. 14. (Grollman.)

Zool. 20. Vertebrate Embryology. (4)

Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or equivalent. Basic principles of early development from the ovum to the establishment of the organ systems. (Ramm.)

Zool. 55S. Development of the Human Body. (2)

Summer session. Five lectures a week. A study of the main factors affecting the growth and development of the child with special emphasis on normal development. (Staff.)

Zool. 75, 76. Journal Club. (1, 1)

First and second semesters. One lecture a week. Prerequisites, permission of the Department and a major in zoology. Reviews, reports and discussions of current literature. (Schoenborn, Haley.)

For Advanced Undergraduates and Graduates

Zool. 102. General Animal Physiology. (4)

Second semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of zoology and one year of chemistry. The general principles of physiological functions as shown in mammals and lower animals. (Schoenborn.)

Zool. 104. Genetics. (3)

First semester. Summer session. Two lectures and one discussion period a week. Prerequisite, one course in zoology or botany. A consideration of the basic principles of heredity. (Highton.)

Zool. 108. Animal Histology. (4)

Second semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. A microscopic study of tissues and organs of vertebrates with special emphasis on the mammal. Practice in elementary histo-technique will be included. (Brown.)

Zool. 110. Parasitology. (4)

First semester. Occasional summer session. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or permission of the instructor. A study of the classification, morphology, life cycles and host relationships of animal parasites, with emphasis on the parasites of man. (Haley.)

Zool. 111. Animal Parasitology. (4)

Second semester, alternate years. (Not offered 1961-62.) Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 110 or equivalent. A study of the classification, morphology, life cycles and host relationships of parasites of fish and wildlife and of domestic animals. (Haley.)

Zool. 118. Invertebrate Zoology. (4)

First semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. An advanced course dealing with the taxonomy, morphology, and embryology of the invertebrates, exclusive of insects. (Linder.)

Zoology

Zool. 121. *Principles of Animal Ecology*. (3)

Second semester. Occasional summer session (4). Two lectures and one three-hour laboratory period a week. Prerequisite, one year of zoology and one year of chemistry. Animals are studied in relation to their natural surroundings. Biological, physical and chemical factors of the environment which affect the growth, behavior, habits, and distribution of animals are stressed. (Stross.)

Zool. 127. *Ichthyology*. (4)

Second semester, alternate years. (Not offered 1961-62.) Two lectures and one two-hour and one three-hour laboratory periods a week. Prerequisites, Zool. 5 and 20. A course in anatomy, embryology, distribution, habits and taxonomy of marine and fresh water fish. (Winn.)

Zool. 128. *Zoogeography*. (4)

First semester, alternate years. (Not offered 1961-62.) Two lectures and two two-hour laboratory periods a week. Prerequisite, one year of zoology, botany, or geology. Principles governing the geographical distribution of living things, with particular reference to ecological changes during geologic time. (Staff.)

Zool. 129. *Vertebrate Zoology*. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1, 2, 5, and 20 or permission of the instructor. The identification, classification, habits and behavior of vertebrates. (Winn.)

Zool. 130. *Hydrobiology*. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, one year of zoology and one year of chemistry or permission of the instructor. The study of freshwater and marine ecosystems, with particular emphasis on the physics, chemistry and production biology of standing waters. (Stross.)

Zool. 150. *Special Problems in Zoology*. (1 or 2)

First and second semesters. Summer session. Prerequisite, major in zoology or biological sciences, a minimum of 3.0 cumulative average in the biological sciences, and consent of instructor. Research or integrated reading in zoology. A student may register several times and receive up to 8 semester hours of credit. (Staff.)

Zool. 181. *Animal Behavior*. (3) (Same as Psych. 181)

Second semester. Three lectures a week. Prerequisite, permission of the instructor. A study of animal behavior, including considerations of social interactions, learning sensory processes, motivation, and experimental methods, with a major emphasis on mammals. (Verplanck, Brady.)

Zool. 199S. *National Science Foundation Summer Institute for Teachers of Science and Mathematics. Seminar*. (1)

Summer session. Seminar fee, \$5.00. An integrated discussion of recent advances and basic principles of biology. The program will include lectures by recognized authorities in various fields of biology, laboratory demonstrations, and organized discussion groups. Student participation will be encouraged. (Brown, Staff.)

For Graduates

Zool. 202. Animal Cytology. (4)

First semester, alternate years. (Not offered 1961-62.) Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 108. A study of cellular structure with particular reference to the morphology and physiology of cell organelles and inclusions. (Brown.)

Zool. 203. Advanced Embryology. (4)

Second semester, alternate years. (To be offered 1961-62.) Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 20. Mechanics of fertilization and growth. A review of the important contributions in the field of experimental embryology. (Ramm.)

Zool. 204. Advanced Physiology. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 102, and one year of organic chemistry. The principles of general and cellular physiology as found in animal life. (Schoenborn.)

Zool. 207. Zoology Seminar. (Credit to be arranged.)

First and second semesters. Summer session. One lecture a week for each credit hour. 1. Cytology; 2. Embryology (General Embryology, Experimental Embryology, Invertebrate Embryology, Transplantation and Regeneration, Endocrines and Development); 3. Fisheries; 4. Genetics (Population Genetics); 5. Parasitology (General Parasitology, Helminthology, Fish Diseases); 6. Physiology (Physiology of Protozoa, Invertebrate Physiology, Physiology of Fishes, Physiology of Development); 7. Systematics (Evolution, Herpetology, Ichthyology, Zoogeography); 8. Ecology (Experimental Ecology, Marine Ecology, Radioisotopes in Ecology, Population Dynamics, Limnology); 9. Behavior (Comparative Behavior, Fish Behavior, Electronic Instrumentation); 10. Recent Advances (Microtechnique and Histochemistry, Russian biology). (Staff.)

Zool. 208. Special Problems in Zoology. (Credit to be arranged)

First and second semesters. Summer session. 1. Cytology; 2. Embryology; 3. Fisheries; 5. Parasitology; 6. Physiology; 7. Systematics; 8. Ecology; and 9. Behavior. (Staff.)

Zool. 209. Advanced Parasitology. (4)

Second semester, alternate years. (To be offered 1961-62.) Three lectures and one three-hour laboratory period a week. Prerequisite, Zool. 110 or permission of the instructor. A study of the nature, origin and physiology of parasitism with emphasis on concepts of pathogenesis, immunity, epidemiology and diagnosis. (Haley.)

Zool. 210. Systematic Zoology. (4)

Second semester, alternate years. (Not offered 1961-62.) Three lectures and one three-hour laboratory period a week. The principles and practices involved in the collection, preservation and classification of animals. (Highton.)

Zool. 211, 212. Lectures in Zoology. (3, 3)

First and second semesters. Three lectures a week. Advanced lectures by outstanding authorities in their particular field of zoology. As the subject matter is continually changing, a student may register several times, receiving credit for several semesters. (Visiting Lecturers.)

Zoology

Zool. 215S. *Fisheries Technology*. (4)

To be offered as needed during the summer session at the Sea Food Processing Laboratory, Crisfield, Maryland. Two lectures and two three-hour laboratory periods a week. The technological aspects of netting and collection of fish and other fishery resources, methods of handling the catch, marketing of fishery products, and recent advances in the utilization of fishery products. (Dunker.)

Zool. 216. *Physiological Cytology*. (4)

First semester, alternate years. (To be offered 1961-62.) Two lectures and two three-hour laboratory periods a week. Prerequisites, Chem. 161, 162, Phys. 11, Zool. 102, or permission of the instructor. A study of the structure and function of cells by chemical, physical and microscopic methods. (Brown.)

Zool. 220. *Advanced Genetics*. (4)

Second semester, alternate years. (To be offered 1961-62.) Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 104. A consideration of recent developments in genetics with emphasis on population genetics and evolution. Breeding experiments with *Drosophila* will be conducted. (Highton.)

Zool. 223. *Analysis of Animal Structure*. (4)

Second semester, alternate years. (Not offered 1961-62.) Two lectures and two three-hour laboratory periods a week. The integration of morphological systems and application of physical laws to animal structures. (Ramm.)

Zool. 231S. *Acarology*. (3)

Summer session. Lecture and laboratory. An introductory study of the Acarina or mites and ticks with special emphasis on classification and biology. (Baker.)

Zool. 232S. *Medical and Veterinary Acarology*. (3)

Summer session. Lecture and laboratory. The recognition, collection, culture and control of Acarina important to public health and animal husbandry with special emphasis on the transmission of diseases. (Camin.)

Zool. 233S. *Agricultural Acarology*. (3)

Summer session. Lecture and laboratory. The recognition, collection, culture, and control of Acarine pests of crops and ornamentals. (Baker.)

Zool. 234. *Experimental Mammalian Physiology*. (4)

First semester. Two four-hour laboratory periods a week. Prerequisites, Zool. 102 and one year of chemistry above general chemistry. The theory, use, and application to research of instrumentation normally found in the physiology laboratory with an introduction to surgical techniques on both large and small animals. (Grollman.)

Zool. 235. *Comparative Behavior*. (4)

Second semester, alternate years. (To be offered 1961-62.) Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 121 and 181, or permission of instructor. An advanced course that deals with comparative whole animal reactions to the inanimate and animate environment. Particular emphasis is placed on the correlation of field and laboratory studies. (Winn.)

Zool. 399. *Research*. (Credit to be arranged.)

First and second semesters. Summer session. Work on thesis project only. 1. Cytology; 2. Embryology; 3. Fisheries; 5. Parasitology; 6. Physiology; 7. Systematics; 8. Ecology; and 9. Behavior. (Staff.)

FACULTY

1961-1962

COLLEGE OF ARTS AND SCIENCES

Administrative Officers

LEON PERDUE SMITH, *Dean of the College and Professor of Romance Languages*
B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930.

CHARLES MANNING, *Assistant Dean of the College and Associate Professor of English*

B.S., Tufts College, 1929; M.A., Harvard University, 1931; PH.D., University of North Carolina, 1950.

Professors

ALFRED OWEN ALDRIDGE, *Professor of English*

B.S., Indiana University, 1937; M.A., University of Georgia, 1938; PH.D., Duke University, 1942; DOCTEUR DE L'UNIVERSITE DE PARIS, 1956.

GEORGE ANASTOS, *Professor of Zoology*

B.S., University of Akron, 1942; M.A., Harvard University, 1947; PH.D., 1949.

THOMAS G. ANDREWS, *Professor and Head of Psychology*

B.A., University of Southern California, 1937; M.A., University of Nebraska, 1939; PH.D., 1941.

WILLIAM T. AVERY, *Professor and Head of Classical Languages and Literatures*

B.A., Western Reserve University, 1934; M.A., 1935; PH.D., 1937; FELLOW OF THE AMERICAN ACADEMY IN ROME, 1937-39.

WILLIAM J. BAILEY, *Research Professor of Chemistry*

B.CHEM., University of Minnesota, 1943; PH.D., University of Illinois, 1946.

RICHARD H. BAUER, *Professor of History*

B.A., University of Chicago, 1924; M.A., 1928; PH.D., 1935.

CARL BODE, *Professor of English*

PH.B., University of Chicago, 1933; M.A., Northwestern University, 1938; PH.D., 1941; FELLOW OF THE ROYAL SOCIETY OF LITERATURE OF THE UNITED KINGDOM.

SUMNER O. BURHOE, *Professor Emeritus of Zoology*

B.S., University of Massachusetts, 1925; M.S., Kansas State College, 1926; PH.D., Harvard University, 1937.

VERNE E. CHATELAIN, *Professor of History*

B.A., Nebraska State Teachers College, 1917; M.A., University of Chicago, 1925; PH.D., University of Minnesota, 1943.

LEON W. COHEN, *Professor and Head of Mathematics*

A.B., Columbia University, 1923; A.M., 1925; PH.D., University of Michigan, 1928.

Faculty

JULES DE LAUNAY, *Professor of Physics (Part time)*

B.A., Oxford University, 1935; M.A., 1938; PH.D., Stanford University, 1939.

RAYMOND N. DOETSCH, *Professor of Microbiology*

B.S., University of Illinois, 1942; M.S., Indiana University, 1943; PH.D., University of Maryland, 1948.

AVRON DOUGLIS, *Professor of Mathematics*

A.B., University of Chicago, 1938; M.S., New York University, 1948; PH.D., 1949.

JOHN E. FABER, *Professor and Head of Microbiology*

B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.

WILLIAM F. FALLS, *Professor of Foreign Languages*

B.A., University of North Carolina, 1922; M.A., Vanderbilt University, 1928; PH.D., University of Pennsylvania, 1932.

PETER S. FARAGO, *Visiting Research Professor of Physics*

PH.D., Budapest University, 1940.

RICHARD A. FERRELL, *Professor of Physics*

B.S., California Institute of Technology, 1948; M.S., 1949; PH.D., Princeton University, 1952.

ROBERT E. FULLERTON, *Professor of Mathematics*

B.S., Heidelberg College, 1938; M.S., Syracuse University, 1940; PH.D., Yale University, 1945.

LUCIUS GARVIN, *Professor and Head of Philosophy*

B.A., Brown University, 1928; M.A., 1929; PH.D., 1933.

WESLEY M. GEWEHR, *Professor Emeritus of History*

PH.B., University of Chicago, 1911; M.A., 1912; PH.D., 1922.

RICHARD A. GOOD, *Professor of Mathematics*

B.A., Ashland College, 1939; M.A., University of Wisconsin, 1940; PH.D., 1945.

FRANK GOODWYN, *Professor of Foreign Languages*

B.A., Texas College of Arts and Industries, 1939; M.A., 1940; PH.D., University of Texas, 1946.

ROSE MARIE GRENTZER, *Professor of Music*

B.A., Mus. Ed., Carnegie Institute of Technology, 1935; B.A., Mus., 1936; M.A., 1939.

P. ARNE HANSEN, *Professor of Microbiology*

B.PH., University of Copenhagen, 1922; M.S., 1926; PH.D., Cornell University, 1931.

SUSAN E. HARMAN, *Professor of English*

B.A., University of Nebraska, 1917; M.A., 1918; PH.D., The Johns Hopkins University, 1926.

CHARLES HIERZFELD, *Professor of Physics (Part Time)*

B. CHEM. E., Catholic University, Washington, D. C., 1945; PH.D., University of Chicago, 1951.

HAROLD C. HOFFSOMMER, *Professor and Head of Sociology*

B.A., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

STANLEY B. JACKSON, *Professor of Mathematics*

B.A., Bates College, 1933; M.A., Harvard University, 1934; PH.D., 1937.

AUBREY C. LAND, *Professor and Head of History*

B.ED., Southern Illinois University, 1934; M.A., State University of Iowa, 1938; PH.D., 1948.

PETER P. LEJINS, *Professor of Sociology*

MAGISTER PHILOSOPHIAE, University of Latvia, 1930; MAGISTER IURIS, 1933; PH.D., University of Chicago, 1938.

ELLIS R. LIPPINCOTT, *Professor of Chemistry*

B.A., Earlham College, 1943; M.S., The Johns Hopkins University, 1944; PH.D., 1947.

MONROE H. MARTIN, *Professor of Mathematics*

B.S., Lebanon Valley College, 1928; PH.D., The Johns Hopkins University, 1932.

EDWARD A. MASON, *Professor of Molecular Physics*

B.S., Virginia Polytechnic Institute, 1947; PH.D., Massachusetts Institute of Technology, 1950.

JOHN R. MAYOR, *Professor of Mathematics*

B.S., Knox College, 1928; M.A., University of Illinois, 1929; PH.D., University of Wisconsin, 1933.

ELLIOTT M. MC GINNIES, *Professor of Psychology*

B.A., University of Buffalo, 1943; M.A., Brown University, 1944; PH.D., Harvard University.

JAMES G. MC MANAWAY, *Professor of English*

B.A., University of Virginia, 1919; M.A., 1920; PH.D., The Johns Hopkins University, 1931.

BRUCE L. MELVIN, *Professor of Sociology*

B.S., University of Missouri, 1916; M.A., 1917; PH.D., 1921.

HORACE S. MERRILL, *Professor of History*

B.E., River Falls State College, 1932; PH.M., University of Wisconsin, 1933; PH.D., 1942.

ELLIOTT MONTROLL, *Research Professor of Physics*

B.S., University of Pittsburgh, 1937; PH.D., 1940.

RAYMOND MORGAN, *Professor of Physics*

B.S., Indiana University, 1916; M.S., 1917; PH.D., University of Pennsylvania, 1922.

CHARLES D. MURPHY, *Professor and Head of English*

B.A., University of Wisconsin, 1929; M.A., Harvard University, 1930; PH.D., Cornell University, 1940.

RALPH D. MYERS, *Professor of Physics*

B.A., Cornell University, 1934; M.A., 1935; PH.D., 1937.

ERNST OPIK, *Visiting Professor of Physics*

Moscow Imperial University, 1916; PH.D., Tartu (Dorpat) University, 1923.

Faculty

- MICHAEL J. PELCZAR, JR., *Professor of Microbiology*
B.S., University of Maryland, 1936; M.S., 1938; PH.D., State University of Iowa, 1941.
- A. J. PRAHL, *Professor of Foreign Languages and Associate Dean of the Graduate School*
M.A., Washington University, 1928; PH.D., The Johns Hopkins University, 1933.
- GORDON W. PRANGE, *Professor of History*
B.A., University of Iowa, 1932; M.A., 1934; PH.D., 1937.
- ERNEST F. PRATT, *Professor of Chemistry*
B.A., University of Redlands, 1937; M.S., Oregon State College, 1939; PH.D., University of Michigan, 1942.
- B. HARLAN RANDALL, *Professor of Music*
B.MUS., Washington College, 1938.
- WILKINS REEVE, *Professor of Chemistry*
B.S., Drexel Institute of Technology, 1936; PH.D., University of Wisconsin, 1940.
- ALLIE W. RICHESON, *Professor of Mathematics*
B.S., University of Richmond, 1918; M.A., Johns Hopkins University, 1925; PH.D., 1928.
- CARL L. ROLLINSON, *Professor of Chemistry*
B.S., University of Michigan, 1933; PH.D., University of Illinois, 1939.
- HOMER W. SCHAMP, JR., *Professor of Molecular Physics*
A.B., Miami University, 1944; M.S., University of Michigan, 1947; PH.D., 1952.
- HENRY W. SCHOENBORN, *Professor of Zoology*
A.B., DePauw University, 1933; PH.D., New York University, 1939.
- LEON P. SMITH, *Dean, College of Arts and Sciences, and Professor of Romance Languages*
B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930.
- S. FRED SINGER, *Professor of Physics*
B.E.E., Ohio State University, 1943; M.A., Princeton University, 1944; PH.D., 1948.
- KARL L. STELLMACHER, *Professor of Mathematics*
MASTER'S DEGREE, University of Gottingen, 1933; PH.D., 1936.
- FRANK STERN, *Professor of Physics (Part Time)*
B.S., Union College, 1949; PH.D., Princeton University, 1955.
- WARREN L. STRAUSBAUGH, *Professor and Head of Speech and Dramatic Art*
B.S., Wooster College, 1932; M.A., State University of Iowa, 1935.
- WILLIAM J. SVIRBELY, *Professor of Chemistry*
B.S., Carnegie Institute of Technology, 1931; M.S., 1932; D.SC., 1935.
- JOHN S. TOLL, *Professor and Head of Physics*
B.S., Yale University, 1944; M.A., Princeton University, 1948; PH.D., 1952.
- HOMER ULRICH, *Professor and Head of Music*
M.A., University of Chicago, 1939.

FLETCHER P. VEITCH, *Professor of Chemistry*

B.S., University of Maryland, 1931; M.S., 1933; PH.D., 1935.

WILLIAM S. VERPLANCK, *Professor of Psychology*

B.S., University of Virginia, 1937; M.A., 1938; PH.D., Brown University, 1941.

JOSEPH WEBER, *Professor of Electrical Engineering and Physics*

B.S., U.S. Naval Academy, 1940; PH.D., The Catholic University of America, 1951.

FRED W. WELLBORN, *Professor of History*

B.A., Baker University, 1918; M.A., University of Kansas, 1923; PH.D., University of Wisconsin, 1926.

G. W. WHARTON, *Professor and Head of Zoology*

B.S., Duke University, 1935; PH.D., 1939.

JAMES P. WHARTON, *Professor and Head of Art*

B.A., Wofford College, 1914; B.A., Duke University, 1914; Graduate, Maryland Institute of Fine Arts, 1923; M.F.A., University of Guanajuato, Mexico, 1952.

JOHN R. WESKE, *Visiting Research Professor of Fluid Dynamics*

DIPL. ING. TECH. HOCHSCHULE, 1923; M.S., Harvard, 1932; SC.D., 1934.

CHARLES E. WHITE, *Professor and Head of Chemistry*

B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

G. FORREST WOODS, *Professor of Chemistry*

B.S., Northwestern University, 1934; B.A., 1935; M.S., Harvard University, 1937; PH.D., 1940.

W. GORDON ZEEVELD, *Professor of English*

B.A., University of Rochester, 1924; M.A., The Johns Hopkins University, 1929; PH.D., 1936.

A. E. ZUCKER, *Professor and Head of Foreign Languages*

B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

Associate Professors

ROY S. ANDERSON, *Associate Professor of Physics*

A.B., Clark University, 1943; M.A., Dartmouth College, 1948; PH.D., Duke University, 1951.

CECIL R. BALL, *Associate Professor of English*

B.A., College of William and Mary, 1923; M.A., University of Maryland, 1934; PH.D., The Johns Hopkins University, 1955.

GEORGE F. BATKA, *Associate Professor of Speech and Dramatic Art*

B.A., Wichita University, 1938; M.A., University of Michigan, 1941.

ALFRED J. BINGHAM, *Associate Professor of Foreign Languages*

B.A., Yale University, 1933; PH.D., Columbia University, 1939.

JOHN W. BRACE, *Associate Professor of Mathematics*

B.A., Swarthmore College, 1949; M.A., Cornell University, 1951; PH.D., 1953.

Faculty

- JOSHUA R. C. BROWN, *Associate Professor of Zoology*
B.A., Duke University, 1948; M.A., 1949; PH.D., 1953.
- FRANKLIN D. COOLEY, *Associate Professor of English*
B.A., The Johns Hopkins University, 1927; M.A., University of Maryland, 1933;
PH.D., The Johns Hopkins University, 1940.
- EITEL W. DOBERT, *Associate Professor of Foreign Languages*
B.A., University of Geneva, 1932; M.A., University of Maryland, 1949; PH.D., 1954.
- DONALD C. GORDON, *Associate Professor of History*
B.A., College of William and Mary, 1934; M.A., Columbia Teachers College, 1938;
PH.D., Columbia University, 1947.
- WILLIAM H. GRAVELY, JR., *Associate Professor of English*
B.A., College of William and Mary, 1925; M.A., University of Virginia, 1934; PH.D., 1953.
- SIDNEY GROLLMAN, *Associate Professor of Zoology*
B.S., University of Maryland, 1947; M.S., 1949; PH.D., 1952.
- A. JAMES HALEY, *Associate Professor of Zoology*
B.S., University of New Hampshire, 1949; M.S., 1950; SC.D., Johns Hopkins University, 1955.
- FRANCIS R. HAMA, *Associate Research Professor of Fluid Dynamics*
M.E., Tokyo Imperial University, 1940; SC.D., 1952.
- RICHARD HENDRICKS, *Associate Professor of Speech and Dramatic Art*
B.A., Franklin College, 1937; M.A., Ohio State University, 1939; PH.D., 1956.
- WILLIAM F. HORNYAK, *Associate Professor of Physics*
B.E.E., City College of New York, 1944; M.S., California Institute of Technology, 1945; PH.D., 1949.
- JOHN HORVATH, *Associate Professor of Mathematics*
PH.D., University of Budapest, 1947.
- RICHARD B. HOVEY, *Visiting Associate Professor of English*
B.A., University of Cincinnati, 1942; M.A., Harvard University, 1943; PH.D., 1950.
- JAMES A. HUMMELL, *Associate Professor of Mathematics*
B.S., California Institute of Technology, 1949; M.A., Rice Institute, 1953; PH.D., 1955.
- RICHARD W. ISKRAUT, *Associate Professor of Physics*
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Faculty

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A.B., Trinity College, 1956.

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B.S., National Taiwan University, 1958.

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COLLEGE
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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26-1 Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
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B.S., University of Maryland, 1942; PH.D., 1952.

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ADOLF E. ZUCKER, *Chairman of the Division of Humanities*

B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

GENERAL COMMITTEE ON EDUCATIONAL POLICY

Dr. Peter P. Lejins (Arts and Sciences), *Chairman*

GENERAL COMMITTEE ON STUDENT LIFE AND WELFARE

Dr. L. Morris McClure (Education), *Chairman*

COMMITTEE ON ADMISSIONS AND SCHOLASTIC STANDING

Dr. Kenneth O. Hovet (Education), *Chairman*

COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Charles E. Manning (Arts and Sciences), *Chairman*

COMMITTEE ON SCHEDULING AND REGISTRATION

Dr. Robert D. Rappleye (Agriculture), *Chairman*

COMMITTEE ON PROGRAMS, CURRICULA, AND COURSES

Dr. Lucius Garvin (Arts and Sciences), *Chairman*

COMMITTEE ON FACULTY RESEARCH

Dr. Edward J. Herbst (Medicine), *Chairman*

COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Dr. Albin O. Kuhn (Executive Vice President), *Chairman*

COMMITTEE ON LIBRARIES

Dr. William J. Svrbely (Arts and Sciences), *Chairman*

COMMITTEE ON UNIVERSITY PUBLICATIONS

Dr. Charles A. Taff (Business and Public Administration), *Chairman*

COMMITTEE ON INTERCOLLEGIATE COMPETITION

Dr. John E. Foster (Agriculture), *Chairman*

COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM, AND TENURE

Dr. Peter P. Lejins (Arts and Sciences), *Chairman*

COMMITTEE ON APPOINTMENTS, PROMOTIONS, AND SALARIES

Dr. Robert L. Green (Agriculture), *Chairman*

COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. G. Kenneth Reiblich (Law), *Chairman*

COMMITTEE ON COUNSELING OF STUDENTS

Dr. Harold F. Sylvester (Business and Public Administration), *Chairman*

COMMITTEE ON THE FUTURE OF THE UNIVERSITY

Dr. Augustus J. Pahl (Graduate School), *Chairman*

CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

ADJUNCT COMMITTEES OF THE GENERAL COMMITTEE ON STUDENT LIFE AND WELFARE

STUDENT ACTIVITIES

Dr. Conrad Link (Agriculture), *Chairman*

FINANCIAL AIDS AND SELF-HELP

Dr. Paul E. Nystrom (Agriculture), *Chairman*

STUDENT PUBLICATIONS AND COMMUNICATIONS

Prof. Warren Strausbaugh (Arts and Sciences), *Chairman*

RELIGIOUS LIFE

Dr. Redfield Allen (Engineering), *Chairman*

STUDENT HEALTH AND SAFETY

Dr. M. H. Eyler (Physical Education), *Chairman*

STUDENT DISCIPLINE

Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krah (Medicine), *Chairman*

THE COLLEGE

THE UNIVERSITY OF MARYLAND IS IN AN UNUSUALLY FAVORABLE LOCATION for students of business, government and politics, economics, public administration, geography, journalism and public relations, foreign service and international relations. Downtown Washington is only twenty-five minutes away in one direction, while the Baltimore business district is less than an hour in the other. There is frequent transportation service from College Park to each city. Assistance is given qualified students who wish to obtain a first-hand view of the far-flung economic activities of the national government or to utilize the libraries, government departments, and other facilities available in Washington.

The College of Business and Public Administration is a member of the American Association of Collegiate Schools of Business.

Organization

The College comprises seven departments and two bureaus of research.

- I. Department of Business Organization and Administration
 1. Accounting and Statistics
 2. Financial Administration
 3. Industrial Administration
 4. Insurance and Real Estate
 5. Marketing Administration
 - (a) Advertising
 - (b) Foreign Trade
 - (c) Retail Store Management
 - (d) Sales Management
 6. Personnel Administration
 7. Transportation Administration
 - (a) Airline and Airport Management
 - (b) Traffic Management
 8. Public Administration
- II. Department of Economics
- III. Department of Foreign Service and International Relations
- IV. Department of Geography
- V. Department of Government and Politics
- VI. Department of Journalism and Public Relations
- VII. Department of Office Management and Techniques
 1. Management and Office Automation
 2. Office Techniques

Objectives of the College

VIII. Bureau of Business and Economic Research

IX. Bureau of Governmental Research

X. Affiliated Governmental Organizations

1. Maryland Municipal League
2. Maryland State Association of County Commissioners.

Objectives

The College of Business and Public Administration offers courses designed to prepare young men and women for service in business firms, governmental agencies, cooperative enterprises, labor unions, publishing firms, small business units, and other organizations requiring effective training in administrative skills and techniques, and for the teaching of business subjects, economics, geography, government and politics, and journalism and public relations in high schools and colleges. It supplies scientific training in administration to students and prospective executives on a professional basis comparable to university training in the other professional fields. Administration is regarded as a profession. The College of Business and Public Administration offers its students courses of instruction which present general principles and techniques of management and administration and brings together in systematic form the experiences and practices of business firms and governmental units. This plan of education does not displace practical experience, but supplements and strengthens it by shortening the period of apprenticeship otherwise necessary, and by giving a broad and practical knowledge of the major principles, policies, and methods of administration.

During the first half of the college study program the student secures a broad foundation upon which to base the professional and the more technical courses offered in the last half of the curriculum. The managerial and operating points of view are stressed in the advanced courses in production, marketing, labor, finance, real estate, insurance, accounting, office management and public administration. The purpose of the work offered is to aid the student as a prospective executive in developing his ability to identify and to solve administrative and managerial problems; and to adjust himself and his organization, policies and practices to changing social, political and economic situations.

The aim of the college is to present and illustrate such sound principles of management as are applicable to both big business and small business. Large-scale business, because of its possible economies, will be expanded in some industries under certain well-known conditions. There are, on the other hand, industries and many situations which still call for the small business. If these small-scale businesses are to be operated with profit to the owners and with satisfactory and economical service to the public, it is imperative that authentic principles of administration be applied to them. Sound principles of ethical conduct are emphasized at all times throughout the various courses.

The primary aim of collegiate education for government and business services is to prepare for effective management. The College of Business and Public

Administration, University of Maryland, was established to supply effective education in administration to the young men and women whose task will be the guiding of the more complex business enterprises and governmental units resulting from industrial, social and political development and expansion.

General Information

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean
(College in which you are interested)
The University of Maryland
College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean
(School in which you are interested)
The University of Maryland
Lombard and Greene Streets
Baltimore 1, Maryland

The Program in American Civilization

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American civilization. This program is also designed to provide the student with a general educational background.

Work in American civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field (see catalog for the College of Arts and Sciences).

American Civilization Program

The third level is for students desiring to do graduate work in this field (see the Graduate School Announcements).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American history (6 hours, H. 5, 6), and American government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours would remain an absolute requirement), 3 hours of American history (3 hours remaining as an absolute requirement), and 3 hours of American government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 56 instead of H. 5 and 6. Students who have been exempted from courses in English, history or American government may not take such courses for credit.

2. For the 3 additional hours of the 24 hours required, students elect one course from the following group (Elective Group I):

Econ. 37--Fundamentals of Economics. (Not open to freshmen.

Students who may wish to take additional courses in economics should substitute Econ. 31 for Econ. 37).

Phil. 1--Philosophy of Modern Man

Soc. 1--Sociology of American Life

Psych. 1--Introduction to Psychology

(Students enrolled in the College of Business and Public Administration will normally meet this requirement by taking Econ. 31 in the sophomore year.)

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American history or American government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused; or (b) elective Group I (see 2 above), provided that the same course may not be used as both a Group I and a Group II choice; or (c) Elective Group II. Group II consists of the following 3-hour courses:

H. 41, 42, Western Civilization; either H. 51 or 52, The Humanities; either Mus. 20, Survey of Music Literature or Art 22, History of American Art and Soc. 5, Anthropology.

Academic Information

DEGREES

The University confers the following degrees on students of Business and Public Administration: Bachelor of Science, Master of Business Administration, Master of Arts, and Doctor of Philosophy. The College has a number of graduate assistantships in Business Administration, Economics, Geography, Journalism and Public Relations, Government and Politics, the Bureau of Governmental Research and the Bureau of Business and Economic Research available for qualified graduate students. Applications for these assistantships should be made directly to the Dean of the College of Business and Public Administration. (See the Graduate School Announcements for graduate rules and regulations.)

Each candidate for a degree must file in the Office of the Registrar on a date announced for each semester a formal application for a degree. Candidates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded. Degrees are conferred *in absentia* only in exceptional cases.

GRADUATION REQUIREMENT

A minimum of 120 semester hours of credit with an average of "C" in courses suggested by the College in addition to the specified courses in air science, physical activities and hygiene are required for graduation. A minimum of 57 semester hours of the required 120 hours must be in upper division courses. The student is required to have an average of "C" for courses used in meeting the quantitative graduation requirements. The time required to complete the requirements for the bachelor's degree for the average student is eight semesters. A superior student, by carrying more than the average load, can complete the work in a shorter period of time.

JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "O" credit shall not be included; courses with grade "F" shall be included; courses in Basic Air Science, the physical education required of all University students, and the health courses required of all women students shall not be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

SENIOR RESIDENCE REQUIREMENT

After a student has earned acceptable credit to the extent of 90 semester hours exclusive of the required work in military science, physical activities, and hygiene, either at the University of Maryland or elsewhere, he must earn a subsequent total of at least 30 semester hours with an average grade of "C" or better at the University of Maryland. No part of these credits may be transferred from another institution. Specific requirements for graduation in the selected curriculum must be met.

PROGRAMS OF STUDY

The College offers programs of study in economics, business administration, office techniques, office management, public administration, government and politics, geography, journalism and public relations, and some combination curriculums, e.g., business administration and law, commercial teaching and industrial education. Research is emphasized throughout the various programs.

PROFESSIONAL OBJECTIVES

The executive manager or administrator in modern business enterprises and governmental units and agencies should have a clear understanding of:

(a) the business organizations and institutions which comprise the modern business world;

(b) the political, social, and economic forces which tend to limit or to promote the free exercise of his activities; and

(c) the basic principles which underlie the efficient organization and administration of a business or governmental enterprise.

In addition, the executive or the prospective executive should:

(a) be able to express his thoughts and ideas in correct and concise oral and written English;

(b) have some useful knowledge of the physical world in which he operates;

(c) have a knowledge of the development of modern civilization through a study of history, government, economics, and other social studies;

(d) have a sympathetic understanding of people gained through a study of sociology, geography, politics, labor relations, marketing, and other subjects.

If the executive is to be successful in solving current and future business and governmental problems, he should be skilled in the scientific method of collecting, analyzing, and classifying pertinent facts in the most significant manner, and then, on the basis of these facts, be able to draw sound conclusions and to formulate general principles which may be used to guide his present and

future professional or vocational conduct. In other words, probably the most important qualities in a successful executive are:

(a) the ability to arrive at sound judgments;

(b) the capacity to formulate effective plans and policies, and the imagination and ability to devise organizations, methods, and procedures for executing them.

FACILITIES FURNISHED

The teaching staff and the curriculums of the College of Business and Public Administration have been selected and organized for the purpose of providing a type of professional and technical education that will aid the capable and ambitious student in developing his potential talents to their full capacity.

The college study programs on both the undergraduate and graduate levels presuppose effective training in English, history, government, science, and mathematics.* The program of study for any individual student may be so arranged as to meet the needs of those preparing for specific lines of work, such as accounting, advertising, banking, foreign trade, industrial administration, marketing administration, personnel administration, office management, real estate practice, insurance, journalism, public relations, government employment, office techniques, teaching, and research.

AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of air science will be required to complete the course or take it until graduation whichever occurs first.

Selected students who wish to do so may carry advanced science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning air science, refer to *University General and Academic Regulations*, a publication mailed in September and February of each year to all new undergraduate students.

COSTS

Actual annual costs of attending the University include \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for

*The major portion of this training is usually secured in the four years of high school and the first two years of college.

Honors, Awards and Scholarships

Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A charge of \$300.00 is assessed to all students who are non-residents of the State of Maryland.

A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

For a more detailed statement of costs, write to the Editor of Publications for a copy of the publication, *An Adventure in Learning*.

ADMISSION

All students desiring to enroll in the College of Business and Public Administration must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college than upon a fixed pattern of subject matter. In general, four units of English and one unit each of social studies and natural sciences are required. At least one unit of algebra is required and one unit of plane geometry is desirable. While foreign language is desirable for certain programs no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives.

For a more detailed statement of admissions, write to the Editor of Publications for a copy of the publication, *An Adventure in Learning*.

Honors, Awards and Scholarships

THE DEAN'S LIST OF DISTINGUISHED STUDENTS

Any student who has passed at least 14 hours of work in the preceding semester, without failure of any course, and with an average grade on all courses of at least 3.5, will be placed on the Dean's List of Distinguished Students. This list is posted in the office of the Dean of the College.

BETA GAMMA SIGMA

The Alpha of Maryland Chapter of Beta Gamma Sigma was chartered in 1940. The purpose of this honorary society is to encourage and reward scholarship and accomplishment among students of commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations. Chapters of Beta Gamma Sigma are chartered only in schools holding membership in the American Association of Collegiate Schools of Business. Third and fourth year students in business administration are eligible; if in his third year, a student must rank in the highest four per cent of his class, and if in his fourth year, he must rank in the highest ten per cent in order to be considered for selection.

THE DELTA SIGMA PI SCHOLARSHIP KEY

This is awarded annually to the student who has maintained the highest

scholastic standing during the entire course of study in business administration or economics. Delta Sigma Pi was founded at New York University on November 7, 1907. The Gamma Sigma of Maryland chapter was chartered at the University of Maryland in 1950. Delta Sigma Pi is a professional fraternity organized to foster the study of business in universities; to encourage scholarship, social activity, and the association of students for their mutual advancement by research and practice; to promote closer affiliation between the commercial world and students of commerce; and to further a high standard of commercial ethics and culture, as well as the civic and commercial welfare of the community. Members are selected from the College of Business and Public Administration on the basis of leadership, scholastic standing, and promise of future business success.

PHI CHI THETA KEY

The Phi Chi Theta Key is awarded to the outstanding graduating senior woman in the College of Business and Public Administration on the basis of scholarship, activities, and leadership.

PI SIGMA ALPHA FRED HAYS MEMORIAL AWARD

The Pi Sigma Alpha Fred Hays Memorial Award in Government and Politics is awarded annually by the Department of Government and Politics to the graduating senior who earns the highest grades among the majors in government and politics of the graduating class. The award is a cash award, not less than \$25.00, provided by an anonymous alumnus. This award is named in memory of Fred Hays, an honor graduate and former student president of Pi Sigma Alpha, the honorary political science fraternity. Fred Hays was killed in action in Korea.

THE WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD

This is awarded annually to the graduating senior who has maintained the highest scholastic achievement in the field of financial administration. The award consists of a silver medal embedded in clear plastic and one year's subscription to the *Wall Street Journal*.

SCHOLARSHIPS

The Alumni Association of the University provides a scholarship of \$250.

Baltimore Sunpapers Scholarship in Journalism. The Board of Trustees of A. S. Abell Foundation, Inc. has contributed \$500 to provide a scholarship in journalism to be awarded to a worthy senior in the College of Business and Public Administration who is majoring in editorial journalism.

The Baltimore News-Post finances two \$375 annual journalism scholarships.

The Montgomery County Press Association's \$200 annual journalism scholarship is awarded to a resident of that county.

Honors, Awards and Scholarships

The Maryland Motor Truck Association, Inc., provides an award of \$500 annually to a student in his senior year concentrating in transportation who is registered in the College of Business and Public Administration.

Pilot Freight Carriers, Inc., Winston-Salem, North Carolina, provides a \$500 award to a senior in the College of Business and Public Administration who is concentrating in transportation with a major interest in motor transportation.

The Maryland Association of Certified Public Accountants makes available a scholarship of \$200 for an outstanding senior student in accounting who is registered in the College.

The Arthur Young and Co. Foundation, Inc., makes available a scholarship of \$750 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration.

The Haskins & Sells Foundation, Inc., makes available a scholarship of \$500 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration. In addition to the cash award, a token award in the form of an inscribed silver medallion embedded in plastic will be given to each award winner.

The Delmarva Traffic Club makes available a scholarship of \$250 for an outstanding transportation student in the junior class making his home on the Delmarvia Peninsula.

CURRICULA AND REQUIRED COURSES

A student in the College can so arrange his grouping and sequence of courses as to form a fair degree of concentration in one of the departments. When, however, he wishes to become a *specialist* in any one of the departments, he should plan to continue his subjects on to the graduate level, working toward either the Master's or the Doctor of Philosophy degree.

I. BUSINESS ORGANIZATION AND ADMINISTRATION

Business organizations are set up primarily for the purpose of *producing* and *distributing* goods and services. Modern business administration requires a knowledge of and skill in the use of effective tools for the control of organizations, institutions, and operations. The curriculums of the Department of Business Organization and Administration emphasize the principles and problems of the development and the use of policies and organizations, and the methods, techniques and procedures of execution, in other words, the essence of administration and management.

STUDY PROGRAMS IN THE DEPARTMENT

The programs of study in the Department of Business Organization and Administration are so arranged as to facilitate concentrations according to the major functions of business organization. This plan is not, however, based on the assumption that these major divisions are independent units, but rather that each is closely related and dependent on the others. Every student in Business Administration, therefore, is required to complete satisfactorily a minimum number of required basic subjects in economics and in each of the major functional fields. Each graduate upon completion of the requirements for the bachelor's degree finds himself well grounded in the theory and practice of administration. There are five commonly recognized major business functions, viz: production, marketing, finance, labor relations, and control.

The function of control may be thought of as comprising two sectors, viz. internal and external. Internal control has to do with men, materials, and operations. External control is secured through the force of laws, and court, board and commission decisions, also through the influence of custom and public opinion. Management endeavors to make adequate adjustments to these forces. Courses in law and public administration, for example, aid in giving the students an understanding of the problems, devices, and methods of external or "social" control.

FRESHMAN AND SOPHOMORE REQUIREMENTS

During the first half of the program of study each student in the Department of Business Organization and Administration is expected to complete

Business Organization and Administration Curriculum

the following basic subjects (or the equivalent) except as indicated in a particular curriculum:

<i>Required Courses:</i>	<i>Semester Hours</i>
Eng. 1, 2—Composition and Readings in American Literature ¹ . . .	6
Eng. 3, 4 or 5, 6—Composition and World or English Literature . . .	6
Math. 5, 6—Mathematics	6
Geog. 1, 2—Economic Resources	4
Econ. 4, 5—Economic Developments	4
B.A. 10, Introduction to Business	3
G. & P. 1—American Government ¹	3
Elective Group I ¹	3
H. 5, 6—History of American Civilization ¹	6
B.A. 20, 21—Principles of Accounting	6
Speech 7—Public Speaking	2
Econ. 31, 32—Principles of Economics	6
Air Science and Physical Activities for Men	9*
Health and Physical Activities for Women	8
Electives	3
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Total specified requirements	66 or 67

A minimum of forty per cent of the total number of credits required for graduation must be in subjects with designations other than Business Administration; forty per cent of the required 120 semester hours of academic work must be in Business Administration subjects; the other twenty per cent may be in either group or comprise a combination of the two groups of subjects. An average of "C" in Business Administration courses is required for graduation.

Freshmen who expect to make a concentration in foreign trade, or who plan to enter public service abroad, should elect an appropriate foreign language. If a foreign language is elected, 12 semester hours or the equivalent must be completed with an acceptable grade.

JUNIOR AND SENIOR REQUIREMENTS

During the junior and senior years each student in the Department is required to complete in a satisfactory manner the following specified courses unless the particular curriculum being followed provides otherwise:

¹See American Civilization, page 3.
^{*}Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

Business Organization and Administration Curriculum

Econ. 140—Money and Banking	3
B. A. 140—Business Finance	3
B. A. 159—Marketing Principles and Organization	3
B. A. 199—Business Policy	3
Econ. 160—Labor Economics	3
B. A. 130—Elements of Business Statistics	3
B. A. 168—Management and Organization Theory	3
B. A. 180, 181—Business Law I, II	6
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Total	27

The remaining credits for juniors and seniors may be used to meet the requirements for one of the special concentration programs, for example, in public administration, foreign service, commercial teaching, and in the fields of business administration, such as: accounting and statistics, production administration, marketing, advertising, retailing, purchasing, foreign trade, transportation, labor relations, real estate, insurance, investment and general finance. Juniors and seniors may elect appropriate office technique courses.

COMBINED ADMINISTRATION AND LAW PROGRAM

When a student elects the combination Administration-Law curriculum, he must complete in a satisfactory manner the specific requirements listed for the first three years of the general curriculum in administration plus enough electives to equal a minimum of 92 credits exclusive of air science, physical activities and hygiene, with an average grade of at least "C". The last year of college work before entering the Law School of the University of Maryland must be done in residence at College Park. The Bachelor of Science degree from the College of Business and Public Administration is conferred upon the completion of the first year in the Law School with an average grade of "C" or better. Eligible candidates are recommended for the degree of Bachelor of Science by the College of Business and Public Administration upon the concurrent recommendation of the School of Law, University of Maryland. Business Law cannot be used as credit in this combined curriculum.

MASTER OF BUSINESS ADMINISTRATION

Candidates for the degree of Master of Business Administration are accepted in accordance with the procedures and requirements for the graduate School. (See the Graduate School Announcements, Section II.)

THE GENERAL CURRICULUM IN ADMINISTRATION

This curriculum is set up on an eight semester basis which corresponds to the traditional four-year course that leads to a bachelor's degree. A student may complete the full course in a shorter period of time by attending summer sessions. A superior student may, however, complete the course in a shorter period of time by carrying a heavier load each semester.

Business Organization and Administration Curriculum

In addition to the basic two years and the basic Junior-Senior subjects the following:

B.A. 150—Marketing Management	3
B.A. 160—Personnel Management	3
B. A. 170—Principles of Transportation	3
B.A. 189—Government and Business	3
Econ. 171—Economics of American Industries	3
Total	15

Plus any one of the following courses:

Econ. 131—Comparative Economic Systems	3
Econ. 142—Public Finance and Taxation	3
B. A. 110—Intermediate Accounting	3
B. A. 148—Advanced Financial Management	3
B. A. 184—Public Utilities	3

Plus approved electives to meet graduation requirements (120 hours)

Electives may be chosen under the direction of a faculty adviser from courses in accounting, statistics, geography, public utilities and public administration, office techniques or other courses that will aid the student in preparing for his major objective. The electives indicated in the General Course are provided so that students can arrange their schedules, under the guidance of a faculty adviser, in such a way as to secure a concentration or major when desired in:

- | | |
|------------------------------|----------------------------------|
| 1. Accounting and Statistics | 5. Marketing Administration |
| 2. Financial Administration | 6. Personnel Administration |
| 3. Industrial Administration | 7. Transportation Administration |
| 4. Insurance and Real Estate | 8. Public Administration |

1. ACCOUNTING AND STATISTICAL CONTROL

Internal control in modern business and governmental organizations is a major over-all administrative function. The rapid growth in size and complexity of current governmental units and business enterprises has emphasized the importance of the problems of control in management. In order to control intelligently and effectively the manifold activities of these units, it is necessary to establish an organization, formulate policies, and develop methods of procedures. In order to perform satisfactorily these managerial activities, it is necessary to have pertinent facts concerning the operations of the various units, divisions, and departments. It is the function of the accounting and statistical departments to secure, analyze, classify, and interpret these facts.

This study program is designed to give the student a broad training in administrative control supplemented by specific technical training in the problems, procedures, methods and techniques of accounting and statistics. If the program is followed diligently, the student may prepare himself for a career as a public accountant, tax specialist, cost accountant, auditor, budget officer, comptroller, credit manager, treasurer or statistician.

In order to provide for practical experience arrangements have been made with firms of certified public accountants in Baltimore, New York and the District of Columbia for apprenticeship training in the field of public accounting. This training is provided between semesters of the senior year (approximately January 15 to February 15), and for the semester immediately following graduation. A student may also elect to take one semester of apprenticeship training before graduation.

Students who select a concentration in accounting and statistics follow the general study program in the freshman and sophomore years.

The following study program provides courses for those wishing to concentrate in this important field:

	Semester	
	I	II
<i>Junior Year</i>		
B. A. 110, 111—Intermediate Accounting	3	3
B. A. 109—Accounting Techniques	3	
B. A. 121, 123—Cost Accounting, Income Tax Accounting . .	4	4
B. A. 130—Statistics		3
B. A. 140—Business Finance		3
Econ. 140—Money and Banking	3	
B. A. 168—Management & Organization Theory	3	
Econ. 160—Labor Economics		3
Total	16	16
<i>Senior Year</i>		
B. A. 180, 181—Business Law	3	3
B. A. 159—Marketing Principles & Organization	3	
Accounting Electives (minimum) ₁	6(3)	3(6)
B. A. 199—Business Policy		3
Free electives	3(6)	6(3)
Total	15	16
Total Junior-Senior Requirements	31	31

Senior accounting electives to be chosen among:

- B.A. 126—Advanced Accounting (3) B. A. 122—Auditing (3)
 B. A. 125—C.P.A. Problems (3) B. A. 118—Governmental Accounting (3)
 B. A. 124—Budgeting and Control (3) B. A. 182—Advanced Business Law (3)

¹Students planning to take the C.P.A. examination in Maryland must elect B.A. 122, 125, 126, and 182. Students planning to take the examination in any other state should determine the course requirements, if any, for such state and arrange their program accordingly.

2. FINANCIAL ADMINISTRATION

A nation with a highly developed industrial system requires an effective financial organization. Production and marketing activities of business enterprises must be financed; a large volume of consumer purchase depend on credit, and the activities of local, state and federal government depend, in large part, on taxation and borrowing. To meet these needs a complicated structure of financial institutions, both private and public, has evolved together with a wide variety of financial instruments. The methods used are equally varied and complicated. Since the financing service is so pervasive throughout our economic life and because it is an expense which must be borne by the ultimate purchaser, the management of the finance function is endowed with a high degree of public interest.

This study program is designed to give the student fundamental information concerning financing methods, institutions, and instruments; and to aid him in developing his ability to secure and evaluate pertinent facts, and to form sound judgments with reference to financial matters. Through a wise selection of subjects the student who selects this curriculum may prepare himself for positions in the commercial, savings, and investment banking fields, investment management; corporate financial management; real estate financing; and insurance. A student may qualify himself to enter government service, e. g., in departments regulating banking operations, international finance, the issuance and sales of securities, and a number of financial corporations owned and operated or controlled by the government.

Students wishing to form a concentration in financial administration should follow the general study program for the freshman and sophomore years; the program for the junior and senior years is as follows:

B. A. 110-111—Intermediate Accounting	6
B. A. 141—Investment Management	3
B. A. 143—Credit Management	3
B. A. 148—Advanced Financial Management	3
<hr/>	
Total	15

Three hours to be selected from the following:

B. A. 184—Public Utilities	3
B. A. 196—Real Estate Finance	3
Econ. 147—Business Cycles	3
Econ. 142—Public Finance & Taxation	3
<hr/>	
Total Required	18
Free Electives	17
<hr/>	
	35

3. INDUSTRIAL ADMINISTRATION

This curriculum is designed to acquaint the student with the problems of organization and control in the field of industrial management. Theory and practice with reference to organization, policies, methods, processes, and techniques are surveyed, analyzed, and criticized. The student becomes familiar with the factors that determine plant location and layout, types of buildings, and the major kinds of machines and processes utilized, as well as effective methods and devices for the selection and utilization of men, materials and machines.

The courses, in addition to those required of all students in the College, which will aid the undergraduate student in preparing himself for a useful place in this field of effort are:

B. A. 121—Cost Accounting	4
B. A. 160—Personnel Management	3
B. A. 169—Production Management	3
B. A. 177—Motion Economy & Time Study	3
B. A. 163—Industrial Relations	3
B. A. 161—Personnel Techniques	3
Total Required	19
Free electives (At least 9 outside Business Admin.)	16
Total	35

4. INSURANCE AND REAL ESTATE

Today both insurance and real estate are fields which prefer university trained persons. In insurance, opportunities are available in the home offices and in the field to persons who will ultimately specialize in life, property, or casualty insurance. In real estate, a group of specialists—real estate brokers, appraisers, property managers, and persons handling the financing of real estate—are now recognized. A proper arrangement of courses by a student will provide academic preparation toward the examinations for Chartered Life Underwriter (C.L.U.), Chartered Property Casualty Underwriter (C.P.C.U.), and new professional requirements in real estate. Also, from a purely personal or family viewpoint these courses can be of immense value.

Students who select a concentration in insurance and real estate should follow the general study program for the freshman and sophomore years. The program for the junior and senior years is outlined below.

B. A. 190—Life Insurance	3
B. A. 191—Property Insurance	3
B. A. 195—Real Estate Principles	3
B. A. 196—Real Estate Finance	3
Total	12

Marketing Administration Curriculum

Plus approved electives, 6 of which must be in Business Administration courses, to meet graduation requirements (120 hours).

5. MARKETING ADMINISTRATION

Modern business administration is concerned largely with marketing activities. Buying and selling of products and services comprise the major portion of the time and energies of a large group of our population. The ideals of our system of private property, individual initiative and free enterprise are closely related to present-day marketing organization and practice. Effective solutions of the problems of marketing are necessary to the success of the individual business enterprise and for the welfare of the consumer. If the costs of distribution are to be reduced or kept from rising unduly, it is necessary that careful study be made of the organization, policies, methods, and practices of advertising, selling, purchasing, merchandising, transportation, financing, storing, and other related marketing activities, and appropriate action taken by qualified technicians and executives.

The purpose of the marketing administration program is to give the student an opportunity to analyze, evaluate and otherwise study the problems connected with marketing institutions, organizations, policies, methods, and practices. The student who elects this field of concentration may develop his aptitudes, on the technical level, for research, selling, buying, and advertising and on the administrative level develop his abilities for organizing, planning, and directing the various activities in the field of marketing.

In addition to those courses required of all students in business administration, the marketing administration program requires the following courses:

B. A. 150—Marketing Management	3
B. A. 151—Principles of Advertising	3
B. A. 154—Retail Store Management	3
B. A. 156—Marketing Research	3
<hr/>	
Total Required	12

From the following, the student will elect, with the consent of the advisor, 6 additional credit hours:

B. A. 143—Credit Management	3
B. A. 152—Advertising Copy and Layout	3
B. A. 153—Purchasing Management	3
B. A. 155—Retail Problems	3
B. A. 158—Problems in Advertising	3
B. A. 170—Principles of Transportation	3
<hr/>	
Total elected	6
Total required marketing	18 hours

Free electives (at least 11 hours of which must be non-Business Administration courses. The student so desiring may use up to 6 hours for marketing courses.)

6. PERSONNEL ADMINISTRATION AND LABOR RELATIONS

Recent developments of large scale operation on the part of both private enterprise and government has emphasized the growing importance of personnel relationships. Successful operation depends on harmonious cooperation between employer and employee. The interests of the public, the owners, and the management, as well as those of the employees may be greatly affected by the solutions evolved in any given case of personnel relationship. The growth of large-scale, centrally controlled labor organizations and the increased participation of governmental agencies in labor disputes have created problems for which business management, union officials, and government representatives have been, on the whole, ill-prepared to solve satisfactorily. The government, the unions, and business need men and women qualified to deal effectively with these problems. They should have broad training and technical information in the fields of business and public administration, economics, and psychology, together with suitable personalities. They must be able to approach these problems with an open mind, unbiased by personal and class prejudices.

Personnel administration which has to do with the direction of human effort, is concerned with securing, maintaining, and utilizing, an effective working force. People adequately trained in personnel administration find employment in business enterprises, governmental departments, governmental corporations, educational institutions and charitable organizations.

B. A. 160—Personnel Management	3
B. A. 161—Personnel Management Techniques	3
B. A. 163—Industrial Relations	3
B. A. 164—Recent Labor Legislation and Court Decisions.....	3
B. A. 189—Government and Business	3
Psych. 161—Industrial Psychology ¹	3
Free electives	17
	<hr/>
Total	35

7. TRANSPORTATION ADMINISTRATION

The problems of transportation administration are complex and far reaching. The student preparing for this type of work shall be well grounded in economics, government, and business administration, as well as being proficient in the use of the technical tools of the profession. Rail, highway, water, and air transportation are basic to our economic life, in fact, to our very existence. This curriculum gives considerable emphasis to air transportation.

The following courses, in addition to those required of all students in the college will aid the student in preparing himself for a useful place in the fields

¹Students are advised that 6 hours of lower division psychology courses are required for entrance into any "100" course. Students are advised to select Psych. 1 as an Elective Group I under American Civilization Program and Psych 21 as their sophomore year elective.

of air, water, highway, and railway transportation. This curriculum besides preparing for positions with carriers also fits the student for industrial traffic management, trade association and government work in transportation.

B. A. 170—Principles of Transportation	3
B. A. 171—Industrial Traffic Management	3
B. A. 172—Motor Transportation	3
B. A. 173—Water Transportation	3
B. A. 174—Air Transportation	3
Total	15

Three hours to be selected from the following:

B. A. 176—Motor Carrier Administration	3
B. A. 175—Airline Administration	3
B. A. 157—Foreign Trade Management	3
Total Required	18
Free Electives	17
Total	35

8. PUBLIC ADMINISTRATION

The trend toward increased governmental participation in the fields of our economic, political and social life has been developing for a number of years so that now the government is the largest business enterprise in the country. In addition to the Federal Government, state and local government agencies have called upon the universities to aid in training young men or women for effective public service. Students desiring a specialized training in the broad field of government service should take the regularly established curriculum in Government and Politics appearing in pages 58-62 of this catalog and select electives from the following:

- G. & P. 111—Public Personnel Administration (3)
- G. & P. 112—Public Financial Administration (3)
- G. & P. 181—Administrative Law (3)
- B. A. 10—Introduction to Business (3)
- B. A. 20, 21—Principles of Accounting (3, 3)
- B. A. 130—Elements of Business Statistics (3)
- B. A. 159—Marketing Principles and Organization (3)
- B. A. 189—Business and Government (3)
- Econ. 140—Money and Banking (3)

Other courses may be selected with the approval of the adviser for the program. Students pursuing this curriculum should arrange their programs under the supervision of the Department of Government and Politics.

II. ECONOMICS

The program of studies in the field of economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the social sciences. Students who expect to enroll in the professional schools and those who are planning to enter the fields of business or public administration, or foreign service, or social service administration, will find courses in economics of considerable value to them in their later work. A student of economics should choose his courses to meet the requirements for his major objective, or the Master of Arts, or a Doctor of Philosophy degree. (He should consult the Graduate School Announcements for the general requirements for the advanced degrees.)

REQUIREMENTS FOR AN ECONOMICS MAJOR

In addition to the University requirements in social studies, English, air science, hygiene, and physical activities, the student majoring in economics is required to complete a minimum of 36 semester hours in economics with an average grade of not less than "C". Required courses are Econ. 4, 5, 31, 32, 102 and 132. B.A. 130 (Statistics) is also required and B.A. 20 and 21 (Accounting) are recommended. Other courses in economics to meet the requirements of the the major are to be selected with the aid of a faculty adviser. Business Administration courses which may count as economics credit are B.A. 130, 132, 133, 134, 135, 164, 184, 189.

Economics majors enrolled in the College of Arts and Sciences must, of course, fulfill all the specific requirements of that College, including 12 semester hours of foreign language and 12 semester hours of natural science and mathematics.

Economics majors enrolled in the College of Business and Public Administration may elect to take a foreign language or, in lieu of foreign language, may take B.A. 10 and Geog. 1 and 2. All B.P.A. students must take 6 semester hours of mathematics, but may substitute B.A. 20 and 21 for natural science.

A student who elects economics as a major will normally have earned 10 semester hours credit in the lower division courses in economics prior to beginning the advanced work of the junior year. These lower division courses must be completed with an average grade of not less than "C".

The specific courses comprising the student's program of study should be selected with the aid of a faculty adviser in terms of the student's objectives and major interest. Attention is directed to requirements under the American Civilization Program.

Economics Curriculum

STUDY PROGRAM FOR ECONOMICS MAJOR

	Semester	
	I	II
<i>Freshman Year</i>		
Speech 7—Public Speaking		2
Econ. 4, 5—Economic Developments	2	2
Eng. 1, 2—Composition and American Literature	3	3
Math. 5, 6 or 10, 11 or 18, 19	3	3
G. & P. 1—American Government ¹	3	..
Foreign Language or B. A. 10 and Elective	3	3
A. S. 1, 2—Basic Air Science (men)	½*	2
Hea. 2—Personal Health (women)	2	..
Hea. 4—Community Health (women) . . . . .	..	2
Physical Activities (men and women)	1	1
Total	15½-16½	16-16
<i>Sophomore year</i>		
Eng. 3, 4, or 5, 6—Composition & World or English Literature	3	3
Econ. 31, 32—Principles of Economics	3	3
Foreign Language or Geog. 1, 2	3-2	3-2
Natural Science or B. A. 20, 21	3	3
H. 5, 6—History of American Civilization ¹	3	3
A. S. 3, 4—Basic Air Science (men)	2	½
Physical Activities (men and women)	1	1
Total	15-18	15-16½
<i>Junior Year</i>		
Econ. 140—Money and Banking	3	..
Econ. 132—Advanced Economic Principles	3	..
Econ. 102—National Income Analysis . . . . .	..	3
B. A. 130—Elements of Business Statistics . . . . .	..	3
Econ. 160—Labor Economics	3	..
Econ. 131—Comparative Economic Systems . . . . .	..	3
Electives in Economics, Government and Politics, and Business Administration ²	6	6
Total	15	15

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹See American Civilization Program, page 3.

Foreign Service and International Relations Curriculum

Senior Year	—Semester—	
	I	II
Econ. 136—International Economic Policies and Relations or B. A. 184—Public Utilities	3	
Econ. 142—Public Finance and Taxation		3
Electives in Economics, Government and Politics and Busi- ness Administration ²	12	12
Total	15	15

III. FOREIGN SERVICE AND INTERNATIONAL RELATIONS

If a student expects to enter the foreign service, he should be well grounded in the language, geography, history, and politics of the region of his anticipated location as well as in the general principles and practices of organization and administration. It should be recognized that only a limited training can be secured during the undergraduate period. When more specialized or more extensive preparation is required, graduate work should be planned. The individual program in either instance, however, should be worked out under the guidance of a faculty adviser. The following study program is offered as a guide in the selection of subjects. Attention is directed to requirements under the American Civilization Program.

Freshman Year	—Semester—	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
G. & P. 1—American Government ¹	3	
Foreign Language (Selection)	3	3
Geog. 1, 2—Economic Resources	2	2
Econ. 4, 5—Economic Developments	2	2
Math. 5, 6 or 10, 11	3	3
A. S. 1, 2—Basic Air Science (men)	½*	2
Hea. 4—Community Health (women)		2
Hea. 2—Personal Health (women)	2	
Physical Activities (men and women)	1	1
Elective		3
Total	17½-19	19

²Other electives may be selected with the approval of the Head of the Department of Economics. Normally these electives must be on the junior and senior level.

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement of the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹Those exempted by University examination shall select a substitute course as indicated on page 4, paragraph 3, or in government and politics.

Foreign Service and International Relations Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4, or 5, 6—Composition and World English Literature	3	3
Foreign Language (Continuation of freshman year selection)	3	3
Econ. 31, 32—Principles of Economics	3	3
H. 5, 6—History of American Civilization ²	3	3
G. & P.—Comparative Government, selection in accordance with the student's need	2	2
Speech 7—Public Speaking		2
A. S. 3, 4—Basic Air Science (men)	2	½
Physical Activities (men and women)	1	1
Total	15-17	17-17½
<i>Junior Year</i>		
B. A. 159—Marketing Principles and Organization	3	..
Econ. 140—Money and Banking	3	..
Econ. 160—Labor Economics	..	3
G. & P. 101—International Political Relations	..	3
B. A. 130—Elements of Business Statistics	3	..
Econ. 131—Comparative Economic Systems	..	3
Ec. Geog.—Selection of Regional division to fit student's needs	3	3
Electives to meet student's major interest	3	3
Total	15	15
<i>Senior Year</i>		
G. & P. 102—International Law	..	3
G. & P. 106—American Foreign Relations	3	..
G. & P. 131, 132—Constitutional Law	3	3
B. A. 189—Government and Business	3	..
Econ. 132—Advanced Economic Principles or Econ. 134, Contemporary Economic Thought	3	..
G. & P. 181—Administrative Law	..	3
Econ. 136—International Economic Policies and Relations	3	..
Econ. 149—International Finance and Exchange	..	3
Electives to meet student's major interest	..	3
Total	15	15

SUGGESTED ELECTIVES:

American History 127, 129, 133, 135, 145, and 146.

European History 175, 176, 185, 186, and History 191—History of Russia; History 197—The Far East.

Government and Politics 7, 8, 9, 10, 105, 108, 154, and 197.

IV. GEOGRAPHY

This curriculum is designed to aid the student in securing the facts con-

²See American Civilization Program, page 3.

cerning the major geographical areas of the world and in studying and analyzing the manner in which these facts affect economic, political, and social activities. The student interested in international trade, international political relations, diplomacy, overseas governments, and national aspirations will find the courses in this department of great practical value. Work is offered on both the undergraduate and the graduate levels.

Students who expect to enroll in the engineering and professional schools and those who are planning to enter the fields of business and public administration, or foreign service, will find courses in geography of material value to them in their later work. Openings exist for well-trained geographers in government service, in universities, colleges, and high schools, as well as in private business. A student of geography should choose his courses to meet the requirements for his major objective, be it undergraduate major or minor, or a Master of Arts, or a Doctor of Philosophy degree. He should consult the Graduate School Announcements for the general requirements for the advanced degrees.

REQUIREMENTS FOR AN UNDERGRADUATE MAJOR IN GEOGRAPHY

A student majoring in geography is required to complete satisfactorily 120 semester hours of work in addition to the required work in air science, hygiene, and physical activities. A general average of at least "C" is required for graduation. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

The specific requirements for the geography major are:

I. Geog. 10 and 11 (3,3), or equivalent; Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3,3); Geog. 170 (3) and 18 hours in other geography courses numbered 100 to 199, of which 6 hours must be in non-regional courses; a total of 39 hours in geography.

II. Social Sciences—G. & P. 1 (3); Econ. 31 and 32 (3,3); H. 5, 6 (3,3); Soc. 105 (3); a total of 18 semester hours.¹

III. Natural Sciences—Botany 1 and 113 or 102 (4, 2 or 3); Agron. 114 or equivalent (4); Chem. 1 (4). Total of 13 (14) semester hours.

IV. English—Eng. 1 and 2 (3,3) and 3, 4, or 5, 6 (3,3); Speech 7 (2);

V. Foreign Language and Literature—12 semester hours in one language, unless an advanced course is taken.

VI. Air Science, hygiene, and physical activities. The present University requirement is 9 semester hours in air science and physical activities for able-bodied male students. Women students are required to take 8 semester hours credit in hygiene and physical activities.

A student who elects geography as a major must have earned eighteen semester hours credit in the prerequisite courses in geography prior to be-

¹See American Civilization Program, page 3.

Geography Curriculum

ginning the advanced work of the junior year. These are normally taken during the freshman and sophomore years. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

A minor in geography should consist of Geog. 10 and 11 (3,3), Geog. 30 (3) and such other courses as the major adviser deems suitable.

For the guidance of those who expect to do graduate work in geography, it should be emphasized that the Department of Geography is particularly interested in the appraisal of natural resources in relation to economic, social and political developments; it aims to encourage study of the natural resource base of the culture of an area. This necessitates, on the one hand, an elementary knowledge of certain of the physical sciences as a basis for the physical aspects of geographic study and resource analysis. On the other hand, a certain amount of knowledge of economics, of sociology, and of political organization is necessary in order to understand stages of resource utilization and the social consequences.

The specific courses comprising the student's program of studies should be selected with the aid of a faculty adviser from the Department of Geography in terms of the students objective and major interests. Attention is directed to requirements under the American Civilization Program.

CARTOGRAPHY AND PLANNING

Special study programs are available for those who wish to concentrate in cartography, and for those who wish to prepare for geographic work in planning agencies.

STUDY PROGRAM FOR GEOGRAPHY MAJORS

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Geog. 10, 11—General Geography	3	3
Chem. 1—Introductory Chemistry	4	..
Bot. 1—General Botany . . . . .	..	4
Speech 7—Public Speaking . . . . .	..	2
G. & P. 1—American Government ¹	3	..
Eng. 1, 2—Composition and American Literature	3	3
Foreign Language	3	3
A. S. 1, 2—Basic Air Science (men)	½*	2
Hea. 2—Personal Health (women)	2	..
Hea. 4—Community Health (women) . . . . .	..	2
Physical Activities (men and women)	1	1
Total	17½-19	18

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹See American Civilization Program, page 3.

	—Semester—	
	I	II
<i>Sophomore Year</i>		
Geog. 30—Principles of Morphology	3	..
Geog. 35—Map Reading and Interpretation		3
Geog. 40—Principles of Meteorology	3	..
Geog. 41—Introductory Climatology		3
H. 5, 6—History of American Civilization	3	3
Eng. 3, 4 or 5, 6—Composition and Readings in Literature...	3	3
Foreign Language	3	3
A. S. 3, 4—Basic Air Science (men)	2	½
Physical Activities (men and women)	1	1
Total	16-18	16½
<i>Junior Year</i>		
Bot. 113—Plant Geography	2	..
Agron. 114—Soil Geography		4
Soc. 105—Cultural Anthropology .....	..	3
Econ. 31, 32—Principles of Economics	3	3
Geog.—Selection to fit student's needs	6	3
Electives, with adviser's consent	6	3
Total	17	16
<i>Senior Year</i>		
Geog. 170—Local Field Course	3	..
Geog.—Selection to fit student's needs	6	6
Electives, with adviser's consent	6	3
Total	15	9

V. GOVERNMENT AND POLITICS

GOVERNMENT AND POLITICS MAJOR AND MINOR REQUIREMENTS

In this course of study, the following conditions are to be observed: (1) G. & P. 1, American Government, or its equivalent, is prerequisite to all other courses offered by the Department. Exemption from G. & P. 1 by University examination is equivalent to this prerequisite, and students exempted may not take G. & P. 1 for credit. Students taking this course of study, who are not so exempted, must complete G. & P. 1 with a grade of "C" or better. (2) In this curriculum, at least 33 hours of Government and Politics, in addition to G. & P. 1, or its equivalent, must be completed with a grade of "C" or better. (3) The electives of the junior and senior years are to be chosen from the list suggested below, unless consent to take other courses is obtained from the Head of the Department. Electives in Government and Politics and in related fields are to be chosen to make an integrated course of study. Attention is directed to requirements under the American Civilization Program.

Government and Politics Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
G. & P. 1—American Government ¹	3	..
Eng. 1, 2—Composition and American Literature	3	3
Math. 5, 6 or 10, 11	3	3
Econ. 4, 5—Economic Developments	2	2
Speech 7—Public Speaking .....	..	2
Foreign Language	3	3
A. S. 1, 2—Basic Air Science (men)	½*	2
Hea. 2—Personal Health (women)	2	..
Hea. 4—Community Health (women) .....	..	2
Physical Activities (men and women)	1	1
Elective .....	..	3
Total	15½-17	19
<i>Sophomore Year</i>		
G. & P. 4—State Government and Administration	3	..
G. & P. 5—Local Government and Administration or Psych. 1 (Introduction to Psychology) or Soc. 52 (Criminology) ..	..	3
Eng. 3, 4, or 5, 6—Composition & World or English Literature ..	3	3
Foreign Language	3	3
Econ. 31, 32—Principles of Economics	3	3
H. 5, 6—History of American Civilization ²	3	3
A. S. 3, 4—Basic Air Science (men)	2	½
Physical Activities (men and women)	1	1
Total	16-18	16-16½
<i>Junior Year</i>		
G. & P. 7 or 9, 8 or 10—Comparative Government	2	2
G. & P. 110—Public Administration	3	..
G. & P. 141—History of Political Theory	3	..
G. & P. 174—Political Parties	3	..
G. & P. 124—Legislatures and Legislation .....	..	3
G. & P.—(Elective) .....	..	3
Electives	6	9
Total	17	17

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹Those exempted by University examination shall select a substitute course as indicated on page 4, paragraph 3, or in Government and Politics.

²See American Civilization Program, page 3.

<i>Senior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
G. & P. 101—International Political Relations	3	
G. & P. 131-132—Constitutional Law	3	3
One full year of advanced Economics or B.A. courses	3	3
Electives	6	9
Total	15	15

Suggested electives: Any G. & P. courses not required above; any history courses related to the student's integrated course of study.

Econ. 131—Comparative Economic Systems	B. A. 164—Recent Labor Legislation and Court Decisions
Econ. 132—Advanced Economic Principles	B. A. 180, 181—Business Law
Econ. 134—Contemporary Economic Thought	B. A. 189—Business and Government
Econ. 140—Money and Banking	Phil. 155—Logic
Econ. 142—Public Finance and Taxation	Psych. 21—Social Psychology
Econ. 160—Labor Economics	Psych. 122—Advanced Social Psychology
B. A. 130—Elements of Business Statistics	Soc. 52—Criminology
	Soc. 147—Sociology of Law
	Soc. 186—Sociological Theory

VI. JOURNALISM AND PUBLIC RELATIONS

The Department offers two professional majors for undergraduate students of superior writing ability: one in editorial journalism, for those who seek beginning news jobs upon graduation; the other in public relations, for those who plan to work in public relations, in public information, or on company publications. The curricula also provide the foundation for a broad education, in addition to understanding of the significance and responsibilities of communications professions as integral forces in society.

Objectives of the Department are: (1) to give the student two years of broad education, (2) to provide one year of technical and background study in editorial journalism or public relations, (3) to arrange one year of elective studies in allied subjects that serve as a background for the major or as further broadening of his general education, and (4) to cooperate with professionals and their organizations in journalism and in public relations.

A student may take as many as 12 semester hours in a subject other than his major in addition to requirements. Specialized jobs are most attractive financially. Journalism majors ordinarily elect secondary concentrations in such fields as agriculture, home economics, business administration, advertising, foreign language, science, social and political sciences, psychology, philosophy. Public relations majors choose theirs from business administration, advertising, political and social sciences, psychology, foreign language. Other electives may be approved by the adviser in this Department.

Journalism and Public Relations Curriculum

To enroll in an upper-division course in this Department, a major must have earned at least "B" in Journalism 10 or 11. A major who makes less than a "C" in an upper-division required course is asked to repeat the course and/or change his major.

A student may declare his major in this Department when he enrolls in it at the beginning of any semester, and ordinarily he will be advised from that time until graduation by the same adviser in the Department. In no case, however, can one be graduated with a major in this Department without having spent at least four semesters as a major in one of its curricula.

Majors are urged to work on a student publication throughout their college residence, and to obtain professional experience in the summers.

The Department maintains close working relations with professionals and their organizations in this area. One of the purposes is to provide speakers, trips, laboratories, and other types of training for students enrolled in the Department's technical courses. The student is notified in advance of each event, and his participation is required.

A required part of the journalism major's education consists of training on the *Baltimore Sunpapers* or *Baltimore News-Post* and on nearby weeklies.

Advanced reporting students spend one afternoon a week with *Sun* or *News-Post* reporters on police and city hall beats; advanced editing students spend one afternoon a week at the central copy desk or at the rewrite desk.

Listed below are the required curricula in journalism and in public relations. Each curriculum requires a minimum of 30 hours in the Department, and not more than 40 hours in the Department is permitted.

LOWER-DIVISION CURRICULA (JOURNALISM, PUBLIC RELATIONS)
JOURNALISM STUDY PROGRAM

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
Elective Group 1 ¹	3	..
G. & P. 1—American Government ¹ . . . . .	..	3
Geog. 1, 2—Economic Resources and Econ. 4, 5—Economic Developments (or foreign language)	4-3	4-3
Math. 5, 6—General Mathematics and Mathematics of Finance (or natural science)	3-4	3-4
Speech 7—Public Speaking		2
Physical Activities (men and women)	1	1
Hea. 2—Personal Health (women)	2	

¹See American Civilization Program, page 3.

Journalism and Public Relations Curriculum

Freshman Year (Continued)	Semester	
	1	II
Hea. 4—Community Health (women)		2
A. S. 1, 2—Basic Air Science (men)	½*	2
Total	14½-16	18

Sophomore Year

Journ. 10—Introduction to Journalism	3	
Journ. 11, News Reporting		3
Eng. 3, 4, or 5, 6—Composition & World or English Literature	3	3
H. 5, 6—History of American Civilization	3	3
Econ. 31, 32—Principles of Economics	3	3
B. A. 10—Introduction to Business and Elective (or foreign language)	3	3
Physical Activities (men and women)	1	1
A. S. 3, 4—Basic Air Science (men)	2	½
Total	18	16½-18

Junior Year

Journ. 160—News Editing I	3	
Journ. 163—Newspaper Typography	3	
Journ. 176—Newsroom Problems		3
Journ. 181—Press Photography		3
G. & P. 178—Public Opinion	3	
Phil. 130—Conflict of Ideals in Western Civilization, or		
Phil. 154—Political and Social Philosophy		3
Electives	7	7
Total	16	16

Senior Year

Journ. 161—News Editing II		3
Journ. 165—Feature Writing		3
Journ. 175—Reporting of Public Affairs	3	
Journ. 191—Law of the Press		3
Journ. 192—History of American Journalism	3	
B. A. 189—Business and Government (either semester)	3	
Electives	7	7
Total	16	16

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

PUBLIC RELATIONS STUDY PROGRAM

Requirements for the first two years of the public relations curriculum are the same as those in the journalism program (see above).

The following curriculum is taken in the junior and senior years by the public relations student who plans to work for a public relations firm or in a public relations department.

For electives preparatory to public relations work in business, the student should look to at least the following fields: business administration, advertising, economics, business statistics, personnel management, and marketing. For governmental public relations work: public administration, American history, international relations, political parties, etc. Good elective courses for any public relations major may be found in psychology, sociology, speech, English, radio, and education.

	Semester	
	I	II
Junior Year		
Journ. 160—News Editing I	3	..
Journ. 165—Feature Writing	..	3
P. R. 166—Public Relations	3	..
Journ. 181—Press Photography	..	3
P. R. 194—Public Relations Cases	2	..
Phil. 130—Conflict of Ideals in Western Civilization, or		
Phil. 154—Political and Social Philosophy	..	3
Electives	8	7
Total	16	16
Senior Year		
P. R. 170—Publicity Techniques	3	..
P. R. 171—Industrial Journalism	..	2
Journ. 161—News Editing II, or Journ. 162—Community Journalism, or Journ. 175—Reporting of Public Affairs	..	3
Journ. 191—Law of the Press	..	3
P. R. 195—Seminar in Public Relations	2	..
G. & P. 178—Public Opinion	3	..
Electives	8	8
Total	16	16

VII. OFFICE MANAGEMENT AND TECHNIQUES

1. MANAGEMENT AND OFFICE AUTOMATION

As business administrators become increasingly dependent upon records of all types to control their business activities, clear channels of information and communication are increasingly difficult to establish and maintain. Astute management finds through office automation a valuable communicative tool in the planning, organizing, controlling, and coordinating of business data so that

the objectives of an enterprise can be achieved most effectively. Consequently, today simplified data processing is becoming mandatory in private and public administration.

The student interested in this field should realize that his background education should include a broad understanding of business and administration in general. In addition, it is essential that the student develop the ability to analyze effectively the elements in an administrative situation while recognizing the functional needs of an organization. The program of studies in management and office automation is designed to meet the needs of students who wish to concentrate on developing managerial skills and competencies in data processing as they apply to the functional fields of finance, marketing, production, personnel and accounting. Because of the rapidly increasing developments in office automation in all types of business, the following curriculum will be a valuable aid in preparing for a career in this field of administration. Attention is directed to requirements under the American Civilization Program.

MANAGEMENT AND OFFICE AUTOMATION

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature	3	3
Math. 5, 6—General Mathematics, Mathematics of Finance	3	3
G. & P. 1—American Government ¹	3	
Psych. 1—Introduction to Psychology		3
Econ. 4, 5—Economic Developments	2	2
Speech 7—Public Speaking	2	
Geog. 1, 2—Economic Resources	2	2
B. A. 10—Introduction to Business		3
A. S. 1, 2—Basic Air Science (men)	½*	2
Hea. 2, 4—Personal and Community Health (women)	2	2
Physical Activities (men and women)	1	1
Total	16½-18	19
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization ¹	3	3
Econ. 31, 32—Principles of Economics	3	3
B. A. 20, 21—Principles of Accounting	3	3
B. A. 14—Survey of Office Machines	2	
O. T. 1—Principles of Typewriting		2
A. S. 3, 4—Basic Air Science (men)	2	½
Physical Activities (men and women)	1	1
Total	15-17	15-15½

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹See American Civilization Program, page 3.

Office Management and Techniques Curriculum

	Semester	
	I	II
Junior Year		
B. A. 166—Business Communications	3	...
B. A. 112—Records Management	..	2
B. A. 100—Office Operations and Management	3	..
B. A. 101—Integrated Data Processing for Internal Control	..	3
B. A. 121—Cost Accounting	..	4
B. A. 130—Elements of Business Statistics	3	..
B. A. 168—Management and Organization Theory	3	..
Econ. 140—Money and Banking	..	3
Econ. 160—Labor Economics	..	3
B. A. 159—Marketing Principles and Organization	3	..
Total	15	15
Senior Year		
B. A. 102—Electronic Data Processing Systems	3	..
B. A. 180, 181—Business Law	3	3
B. A. 160—Personnel Management	3	..
B. A. 103—Office Automation and Management Problems	..	3
B. A. 199—Business Policy	..	3
Electives	6	7
Total	15	16

2. EXECUTIVE SECRETARIAL

This program will appeal to those who realize that positions in secretarial service require much more than office skills (typewriting and shorthand). This curriculum is designed primarily to prepare students for a secretarial career with administrative responsibilities. The development of the student's capacity to plan, organize, direct, and execute is the guiding principle followed in this curriculum. These are essential tools, but an understanding of management and a broad background in the humanities is important for the more responsible positions.

PLACEMENT EXAMINATION

Students with previous training in shorthand and/or typewriting are required to take a placement examination in those subjects at the time of their first registration in a shorthand or typewriting course at the University.

If a student with previous training is unable to meet the prerequisite standard of achievement for the advanced courses, he may change to a less advanced course with less than regular credit.

Credit will be given only for the work done in residence.

RECORD OF COMPETENCY

Students must make a grade of "C" in each course in office techniques

sequences, before they may progress to the next advanced course. A major earning less than a "C" grade in an advanced course is asked to repeat the course.

The following program of study is designed to develop potential aptitudes to an effective end. Attention is directed to requirements under the American Civilization Program.

COMBINED EXECUTIVE SECRETARIAL AND
BUSINESS TEACHING CURRICULUM

Capable students may elect courses offered by the College of Education in such a manner as to qualify themselves for business teaching in high schools.

EXECUTIVE SECRETARIAL PROGRAM

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature	3	3
G. & P. 1—American Government ¹	3	
Speech 7—Public Speaking		2
B. A. 10—Introduction to Business		3
Elect Math. 5, 6; H. 41, 42 or year of science ²	3	3
O. T. 1, 2—Principles of Typewriting, Intermediate Type- writing	2	2
O. T. 12, 13—Principles of Shorthand	3	3
Hea. 2, 4—Personal and Community Health (women)	2	2
A. S. 1, 2—Basic Air Science (men)	½*	2
Physical Activities (men and women)	1	1
Total	15½-17	19
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization ¹	3	3
Econ. 31, 32—Principles of Economics	3	3
O. T. 16, 18—Advanced Gregg Shorthand	2	2
O. T. 17, 19—Problems in Gregg Transcription	2	2
O. T. 10—Office Typewriting Problems	2	
B. A. 14—Survey of Office Machines		2
A. S. 3, 4—Basic Air Science (men)	2	½
Physical Activities (men and women)	1	1
Total	16-18	16½-18

*Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹See American Civilization Program, page 3.

²Any student failing the University entrance examination in mathematics is required to satisfactorily complete Math. O, Basic Mathematics the first semester enrolled in this program.

Bureau of Business Economic Research

	Semester	
	I	II
<i>Junior Year</i>		
B. A. 20, 21—Principles of Accounting	3	3
O. T. 110—Administrative Secretarial Procedures	3	..
B. A. 100—Office Operations and Management .....	..	3
B. A. 166—Business Communications	3	..
Econ. 140—Money and Banking .....	..	3
B. A. 159—Marketing Principles and Organization	3	..
B. A. 112—Records Management .....	..	2
Elect courses at 100 level in Sociology, Government and Politics, Psychology, Humanities	3	4
Total	15	15
<i>Senior Year</i>		
B. A. 180, 181—Business Law	3	3
B. A. 101—Integrated Data Processing for Internal Control ..	3	..
B. A. 102—Electronic Data Processing Systems .....	..	3
O. T. 114—Secretarial Office Experience .....	..	3
Econ. 160—Labor Economics	3	..
B. A. 168—Management and Organization Theory .....	..	3
Electives	6	3
Total	15	15

VIII. BUREAU OF BUSINESS AND ECONOMICS RESEARCH

The Bureau of Business and Economic Research is a laboratory for the practical study of business and economic problems. It has three principal functions: first, to train students in the field of business and economic research; second, to disseminate information concerning business and economic conditions in Maryland, or which affect Maryland interests, and third, to offer advice on research procedures and sources to interested business firms, governmental units, and civic groups.

Through the facilities of the Bureau qualified interested students can obtain practical experience in research work. This involves the application of techniques and principles studied in the class room to actual business and governmental problems.

The Bureau—through its direct contact with business, government, labor and the professions and in its research into problems in these fields—serves as an important source of information relative to business and economic conditions and developments in this region. This information is made available, in part, by means of Bureau publications and, in part, by direct inquiry to the Bureau. This service is supplemented by active cooperation with individual business firms, official agencies, and civic organizations within the state who request advice in the study of specific problems which are recognized as having important bearing upon public welfare. The Bureau welcomes the opportunity to be of real service to such organizations.

IX. BUREAU OF GOVERNMENTAL RESEARCH

The Bureau of Governmental Research was organized in 1947, then called the Bureau of Public Administration. It is closely allied, both in function and personnel, with the Department of Government and Politics. The Department of Government and Politics is the teaching agency; the Bureau of Governmental Research is the research agency. The Bureau's activities relate primarily to the problems of state and local government in Maryland. The Bureau engages in research and publishes findings with reference to local, state and national government. It undertakes surveys and offers its assistance and service to units of government in Maryland. It serves as a clearing house of information for the benefit of Maryland state and local government. The Bureau furnishes an opportunity for qualified interested students to secure practical experience in research in government problems.

The Municipal Technical Advisory Service, established in 1959 as a division of the Bureau, provides consulting services, on a practical level, to the municipal governments of the State. These services are available in so far as practicable in the fields of organization and management, engineering and public works, municipal ordinance and charter drafting, and public information.

X. AFFILIATED GOVERNMENTAL ORGANIZATIONS

(1.) MARYLAND MUNICIPAL LEAGUE

The office of the Maryland Municipal League, an organization of Maryland cities, is located in the College of Business and Public Administration. The League provides opportunities for association to municipal officials, offers services to city governments and organizes legislative programs affecting municipal affairs. It publishes monthly the Maryland Municipal News. The League's mailing address is Maryland Municipal League, Box 276, College Park, Maryland.

(2.) MARYLAND STATE ASSOCIATION OF COUNTY COMMISSIONERS

The office of the Maryland State Association of County Commissioners, an organization of the governing bodies of Maryland counties, is also located in the College. The Association develops programs of cooperation, information, and service among the county governments in the State. The Association's mailing address is Maryland State Association of County Commissioners, Box 362, College Park, Maryland.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: Courses for advanced undergraduates and graduates. Not all courses numbered 100 to 199 may be taken for graduate credit.

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters. Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course. A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

BUSINESS ORGANIZATION AND ADMINISTRATION

Professors: FREDERICK, CALHOUN, CLEMENS, COOK, COVER, FISHER, GENTRY, PYLE, REID, SYLVESTER, SWEENEY, TAFF, WEDEBERG AND WRIGHT.

Associate Professors: DAWSON, NELSON, AND SPIVEY.

Assistant Professors: ANDERSON, ASHMEN, DAIKER, EDELSON, AND LEE.

Instructors: CLICKNER, HEINTZE, HEYE, HIMES, ROMAN, AND WAGNER.

Lecturers: TIERNEY, AND TOWSON.

B.A. 10. Introduction to Business. (3)

A survey course treating the internal and functional organization of a business enterprise, its organization and control.

B.A. 14. Survey of Office Machines. (2)

Prerequisite, sophomore standing. Laboratory fee, \$7.50. The various types of office business machines are surveyed, their capacities and special functions compared. Skill is developed through actual use and demonstration of such machines as: accounting, duplicating, dictating and transcribing, adding and calculating, and other functional types of machines and equipment. The course is designed also to give special training in the handling of practical business problems with machine applications.

B.A. 20, 21. Principles of Accounting. (3, 3)

First and second semesters. Required in all business organization curriculums. Prerequisite, sophomore standing. The fundamental principles and problems involved in accounting for proprietorships, corporations and partnerships.

For Graduates and Advanced Undergraduates

B.A. 100. Office Operations and Management. (3)

Prerequisite, junior standing. Deals with the principles of scientific management as they apply to the examination, improvement, installation, and operation of the most

effective paperwork methods and systems that a given organization can use to achieve its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

B.A. 101. Integrated Data Processing for Internal Control. (3)

Prerequisite, junior standing. Laboratory fee, \$10.00. Comprises the bridge between accounting principles and the actualities of handling a large volume of data in modern business and government operations. Considers the measures necessary to marshal accounting and other information for internal control and for service to management at all levels. The basic principles involved in the combining of accounting and recording machines through a keyboard "language" that is "understood" by other machines will be presented. Punched-card tabulating and punched-tape methods are studied. Graphic flowchart methods are used to integrate these data-gathering techniques into normal accounting and reporting processes.

B.A. 102. Electronic Data Processing Systems. (3)

Prerequisite, B.A. 101, junior standing. Laboratory fee, \$10.00. The electronic digital computer and its use as a business data processor. The course includes the following areas: (1) organization of business information; (2) characteristics of commercially available equipment; (3) flow charts; (4) problems in reduction of processes to component parts; and (5) programming typical internal control problems in business and government.

B.A. 103. Office Automation and Management Problems. (3)

Prerequisite, B.A. 101 or B.A. 102. Administrative problems experienced in introducing computer systems, feasibility studies, and the effect of office automation upon management and organization applied to case situations. Procedure distribution charts, flow diagrams, process charts, and other tools used by the methods analysts are developed in actual situations.

B.A. 109. Accounting Techniques. (3)

Prerequisite, B.A. 21. Required of majors in accounting. Specialized problems of accounting techniques; cash and accrual basis, single entry and complex adjustments and corrections of prior years' data.

B.A. 110, 111. Intermediate Accounting. (3, 3)

First and second semesters. Prerequisite, a grade of "B" or better in B.A. 21 for majors in accounting or consent of instructor. A comprehensive study of the theory and problems of valuation of assets, application of funds, corporation accounts and statements, and the interpretation of accounting statements.

B.A. 112. Records Management. (2)

First and second semesters. Prerequisite, junior standing. Laboratory fee, \$7.50. Specific management methods and techniques that have proved valuable in the creation, use, maintenance, protection and disposition of records are studied.

B.A. 118. Governmental Accounting. (3)

Prerequisite, B.A. 111, or consent of instructor. The content of this course cover the scope and functions of governmental accounting. It considers the principles generally

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applicable to all forms and types of governmental bodies and a basic procedure adaptable to all governments.

B.A. 121. Cost Accounting. (4)

Prerequisite, a grade of "B" or better in B.A. 21 for majors in accounting or consent of instructor. A study of the fundamental procedures of cost accounting, including those for job order, process and standard cost accounting systems.

B.A. 122. Auditing Theory and Practice. (3)

First semester. Prerequisite, B.A. 111. A study of the principles and problems of auditing and application of accounting principles to the preparation of audit working papers and reports.

B.A. 123. Income Tax Accounting. (4)

Prerequisite, a grade of "B" or better in B.A. 21 for majors in accounting, or consent of instructor. A study of the important provisions of the Federal Tax Laws, using illustrative examples, selected questions and problems, and the preparation of returns.

B.A. 124. Budgeting and Control. (3)

Prerequisite, B.A. 21. The use of financial data in controlling an enterprise. Budgetary formulation, execution and appraisal. The use of accounting in managerial decision making.

B.A. 125. C.P.A. Problems. (3)

Second semester. Prerequisite, B.A. 124, or consent of instructor. A study of the nature, form and content of C.P.A. examinations by means of the preparation of solutions to, and an analysis of, a large sample of C.P.A. problems covering the various accounting fields.

B.A. 126. Advanced Accounting. (3)

Prerequisite, B.A. 111. Advanced accounting theory applied to specialized problems in partnerships, estates and trusts, banks, mergers and consolidations, receiverships and liquidations; also budgeting and controllership.

B.A. 128. Advanced Cost Accounting. (2)

Prerequisite, B.A. 121. A continuation of basic cost accounting with special emphasis on process costs, standard costs, joint costs and by-product costs.

B.A. 129. Apprenticeship in Accounting. (0)

Prerequisites, minimum of 20 semester hours in accounting and the consent of the accounting staff. A period of apprenticeship is provided with nationally known firms of certified public accountants from about January 15 to February 15, and for a semester after graduation.

B.A. 130. Elements of Business Statistics I. (3)

Prerequisite, junior standing. Required for graduation. Laboratory fee, \$3.50. An introductory course. Emphasis is placed upon statistical inference. Topics covered include statistical observation, frequency distributions, averages, measures of variability, elementary probability, sampling distributions, problems of estimation, simple tests of hypotheses, index numbers, time series, graphical and tabular presentation.

Selected applications of the techniques are drawn from economics, industrial management, marketing and accounting.

B.A. 131. Elements of Business Statistics II. (3)

Second semester. Prerequisite, B.A. 130. Laboratory fee, \$3.50. Review of elementary probability. Population distributions. Sampling distributions: binomial, Poisson, normal, "t", chi-square and F. Estimates and tests of hypotheses concerning the mean, variance and other parameters. Introduction to analysis of variance, linear regression and correlation.

B.A. 132. Sample Surveys in Business and Economics. (3)

First semester of odd numbered years. Prerequisite, B.A. 130. Laboratory fee, \$3.50. A general course in scientific sample survey techniques. Review of elementary probability, characteristics of good estimators, errors of observation, simple random sampling, stratified random sampling, cluster sampling, comparison of various sample designs, cost functions, examples of actual survey practices.

B.A. 134. Statistical Quality Control. (3)

Second semester. Prerequisite, B.A. 130. Laboratory fee, \$3.50. Statistical fundamentals, theory, construction and use of control charts, acceptance sampling by attributes and variables, work sampling and other industrial applications of statistics.

B.A. 135. Time Series Analysis and Forecasting. (3)

First semester of even-numbered years. Alternates with B.A. 132. Prerequisite, B.A. 133. Laboratory fee, \$3.50. Classical time series analysis, trend, periodic and irregular components, seasonal adjustment, growth curves, recent developments in time series analysis, techniques of forecasting such quantities as labor force, capital formation, demand and sales.

B.A. 140. Business Finance. (3)

Prerequisites, B.A. 21 and Econ. 140. This course deals with principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

B.A. 141. Investment Management. (3)

First semester. Prerequisite, B.A. 140. A study of the principles and methods used in the analysis, selection, and management of investments; investment programs, sources of investment information, security price movements, government, real estate, public utility, railroad, and industrial securities.

B.A. 142. Banking Policies and Practices. (3)

Second semester. Prerequisite, Econ. 140. A study of the organization and management of the Commercial Bank, the operation of its departments, and the methods used in the extension of commercial credit.

B.A. 143. Credit Management. (3)

First and second semesters. Prerequisite, B.A. 140. A study of the nature of credit and the principles applicable to its extension and redemption for mercantile and consumer purposes; sources of credit information and analysis of credit reports; the or-

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ganization and management of a credit department for effective control. Recent developments and effective legal remedies available.

B.A. 148. Advanced Financial Management. (3)

Second semester. Prerequisite, B.A. 140. Advanced course designed for students specializing in finance. Emphasis is placed upon the techniques employed by executives in their application of financial management practice to selected problems and cases. Critical classroom analysis is brought to bear upon actual methods and techniques used by business enterprises.

B.A. 150. Marketing Management. (3)

Prerequisite, B.A. 150a. A study of the work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

B.A. 151. Advertising. (3)

First semester. Prerequisite, B.A. 150. A study of the role of advertising in the American economy; the impact of advertising on our economic and social life, the methods and techniques currently applied by advertising practitioners, the role of the newspaper, magazine, and other media in the development of an advertising campaign, modern research methods to improve the effectiveness of advertising, and the organization of the advertising business.

B.A. 152. Advertising Copy and Layout. (3)

Second semester. Prerequisites, B.A. 151, and senior standing. A study of the practices and techniques of copy writing and layout. The student will participate in exercises designed to teach him the essential principles of writing copy for various media and presenting ideas in visual form. The course deals with the development of ideas rather than art forms.

B.A. 153. Purchasing Management. (3)

First semester. Prerequisites, B.A. 150 and senior standing. Determining the proper sources, quality and quantity of supplies, and methods of testing quality; price policies, price forecasting, forward buying, bidding and negotiation; budgets and standards of achievement. Particular attention is given to government purchasing and methods and procedures used in their procurement.

B.A. 154. Retail Store Management. (3)

First semester. Prerequisites, B.A. 150 and senior standing. Retail store organization, location, layout and store policy; pricing policies, price lines, brands, credit policies, records as a guide to buying; purchasing methods; supervision of selling; training and supervision of retail sales force; and administrative problems.

B.A. 155. Problems in Retail Merchandising. (3)

Second semester. Prerequisite, B.A. 154. Designed to develop skill in the planning and control of merchandise stocks. Deals with buying policies, pricing, dollar and unit control procedures, mark-up and mark-down policies, merchandise budgeting, and the gross margin-expense-net earnings relationships.

B.A. 156. Marketing Research Methods. (3)

Second semester. Prerequisites, B.A. 130 and B.A. 150. This course is intended to develop skill in the use of scientific methods in the acquisition, analysis and interpretation of marketing data. It covers the specialized fields of marketing research, the planning of survey projects, sample design, tabulation procedure and report preparation.

B.A. 157. Foreign Trade Management. (3)

Prerequisites, B.A. 150 and senior standing. Functions of various exporting agencies; documents and procedures used in exporting and importing transactions. Methods of procuring goods in foreign countries; financing of import shipments; clearing through the customs districts; and distribution of goods in the United States.

B.A. 158. Advertising Problems. (3)

Second semester. Prerequisite, B.A. 151. This course is concerned with the way in which business firms use advertising as a part of their marketing program. The case study method is used to present advertising problems taken from actual business practice. Cases studied illustrate problems in demand stimulation, media selection, advertising research, testing, and statistical control of advertising.

B.A. 159. Marketing Principles and Organization. (3)

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

B.A. 160. Personnel Management. (3)

Prerequisite, Econ. 160. This course deals with the problems of directing and supervising employees under modern industrial conditions. Two phases of personal administration are stressed, the application of scientific management and the importance of human relations in this field.

B.A. 161. Personnel Management Techniques (3)

Job evaluation and merit rating and other personnel management techniques generally employed in business.

B.A. 163. Industrial Relations. (3)

Second semester. Prerequisites, B.A. 160 and senior standing. A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

B.A. 164. Recent Labor Legislation and Court Decisions. (3)

First semester. Prerequisites, B.A. 160 and senior standing. Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

Business Organization and Administration

B.A. 166. Business Communications. (3)

First and second semesters. Prerequisite, junior standing. A systematic study of the principles of effective written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

B.A. 168. Management and Organization Theory. (3)

The historical development of management and organization theory, nature of the management process and function and its future development. The role of the manager as an organizer and director, the communication process, goals and responsibilities.

B.A. 169. Production Management. (3)

First and second semesters. Prerequisites, Econ. 160 and B.A. 11. Studies the operation of a manufacturing enterprise. Among the topics covered are product development, plant location, plant layout, production planning and control, methods analysis, time study, job analysis, budgetary control, standard costs, and problems of supervision.

B.A. 170. Principles of Transportation. (3)

Prerequisite, Econ. 32 or 37. A general course covering the five fields of transportation, their development, service and regulation. (This course is a prerequisite for all other transportation courses.)

B.A. 171. Industrial Traffic Management. (3)

Prerequisite, B.A. 170. Covers the details of classification and rate construction for ground and air transportation. Actual experiences in handling tariffs and classifications is provided. It is designed for students interested in the practical aspects of shipping and receiving and is required for all majors in transportation administration.

B.A. 172. Motor Transportation. (3)

First semester. Prerequisite, B.A. 170. The development and scope of the motor carrier industry, different types of carriers, economics of motor transportation, services available, federal regulation, highway financing, allocation of cost to highway users, highway barriers.

B.A. 173. Water Transportation. (3)

Prerequisite, B.A. 170. Water carriers of all types, development and types of services, trade routes, inland waterways, company organization, the American Merchant Marine as a factor in national activity.

B.A. 174. Commercial Air Transportation. (3)

Prerequisite, B.A. 170. The air transportation system of the United States; airways, airports, airlines. Federal regulation of air transportation. Problems and services of commercial air transportation; economics, equipment, operations, financing, selling of passenger and cargo services. Air mail development and services.

B.A. 175. Airline Administration. (3)

Prerequisite, B.A. 174. Practices, systems and methods of airline management; actual work in handling details and forms required in planning and directing maintenance, operations, accounting and traffic transactions, study of airline operations and other manuals of various companies.

B.A. 176. Motor Carrier Administration. (3)

Second semester. Prerequisites, B.A. 170 and 172. Over the road and terminal operations and management, the use of management controls, management organization, Interstate Commerce Commission policy as affecting management decisions.

B.A. 177. Motion Economy and Time Study. (3)

Second semester. Prerequisites, B.A. 169 and senior standing. A study of the principles of motion economy, simo charts, micromotion study, the fundamentals of time study, job evaluation, observations, standard times, allowances, formula construction and wage payment plans.

B.A. 180, 181. Business Law. (3, 3)

First and second semesters. Required in all business organization curriculums. Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

B.A. 182. Advanced Business Law. (3)

Prerequisites B.A. 180 and 181. Legal aspects of wills, insurance, torts and bankruptcy.

B.A. 184. Public Utilities. (3)

Prerequisites, Econ. 32 or 37 and senior standing. Using the regulated industries as specific examples attention is focused on broad and general problems in such diverse fields as constitutional law, administrative law, public administration, government control of business, advanced economic theory, accounting, valuation and depreciation, taxation, finance, engineering and management.

B.A. 189. Business and Government. (3)

Second semester. Prerequisites, Econ. 32 or 37 and senior standing. A study of the role of government in modern economic life. Social control of business as a remedy for the abuses of business enterprise arising from the decline of competition. Criteria of limitations on government regulation of private enterprise.

B.A. 190. Life Insurance. (3)

First semester. Prerequisite, Econ. 32 or 37. A general survey of life insurance: its institutional development, selection of risks, mathematical calculations, contract provisions, kinds of policies, their functional uses, industrial and group contracts and government supervision.

B.A. 191. Property Insurance. (3)

Second semester. Prerequisite, Econ. 32 or 37. A study of the insurance coverages written to protect individuals and businesses; fire, extended coverage, business interruption, automobile, liability, fidelity, surety, inland marine and ocean marine. Hazards, rate-making, legal principles, standard forms and business practices are discussed.

B.A. 195. Real Estate Principles. (3)

First semester. Prerequisite, Econ. 32 or 37. This course covers the nature and uses of real estate, real estate as a business, basic legal principles, construction problems and home ownership, city planning, and public control and ownership of real estate.

Business Organization and Administration

B.A. 196. Real Estate Finance. (3)

Second semester. Prerequisite, Econ. 32 or 37. This course includes consideration of the factors influencing real estate values, methods and techniques in the general appraisal of real estate by brokers and professional appraisers, and general problems in real estate financing.

B.A. 199. Business Policy. (3)

Prerequisite, senior standing. A case study course in which the aim is to have the student apply both what he has learned of general management principles and their specialized functional applications of the overall management function in the enterprise.

For Graduates

(Graduate standing and consent of instructor required.)

B.A. 210. Advanced Accounting Theory. (2-3)

Prerequisite, B.A. 111 and graduate standing.

B.A. 220. Managerial Accounting. (3)

B.A. 221, 222. Seminar in Accounting.

(Arranged.)

B.A. 226. Accounting Systems. (3)

B.A. 228. Research in Accounting.

(Arranged.)

B.A. 229. Studies of Special Problems in the Fields of Control and Organization.

(Arranged.)

B.A. 240. Seminar in Financial Management. (1-3)

Prerequisites, Econ. 140, B.A. 21, B.A. 140.

B.A. 249. Studies of Special Problems in the Field of Financial Administration.

(Arranged.)

B.A. 250. Problems in Sales Management. (3)

B.A. 251. Problems in Advertising. (3)

B.A. 252. Problems in Retail Store Management. (3)

B.A. 257. Seminar in Marketing Management.

(Arranged.)

B.A. 258. Research Problems in Marketing.

(Arranged.)

B.A. 262. Seminar in Contemporary Trends in Labor Relations.

(Arranged.)

- B.A. 265. *Development and Trends in Industrial Management.* (3)
B.A. 266. *Research in Personnel Management.*
(Arranged.)
B.A. 267. *Research in Industrial Relations.*
(Arranged.)
B.A. 269. *Studies in Special Problems in Employer-Employee Relationships.*
(Arranged.)
B.A. 270. *Seminar in Air Transportation.* (3)
B.A. 271. *Theory of Organization.* (3)
B.A. 272. *Seminar in Management of Physical Distribution.* (3)
B.A. 275. *Seminar in Motor Transportation.* (3)
B.A. 277. *Seminar in Transportation.* (3)
B.A. 280. *Seminar in Business and Government Relations.*
(Arranged.)
B.A. 284. *Seminar in Public Utilities.* (3)
B.A. 290. *Seminar in Insurance.* (3)
B.A. 295. *Seminar in Real Estate.* (3)
B.A. 399. *Thesis.*
(Arranged.)

ECONOMICS

Professors: DILLARD, GRUCHY, GURLEY, AND HAMBERG.

Lecturer: JOHNSON.

Associate Professor: GRAYSON.

Assistant Professors: DALTON, DODGE, KNIGHT, MEASDAY, AND SMITH.

Instructors: BARRETT AND DAY.

Econ. 4, 5. Economic Developments. (2, 2)

First and second semesters. Freshman requirements in business administration curriculums. An introduction to modern economic institutions—their origins, development, and present status. Commercial revolution, industrial revolution, and age of mass production. Emphasis on developments in England, Western Europe and the United States. (Dillard, Staff.)

Econ. 31, 32. Principles of Economics. (3, 3)

First and second semesters. Prerequisite, sophomore standing. Required in the business administration curriculums. In Econ. 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced.

Economics

In Econ. 32 emphasis is placed on price theory, distribution, international trade, and economic development. (Grayson, Staff.)

Econ. 37. Fundamentals of Economics. (3)

First and second semesters. Not open to students who have credit in Econ. 31 and 32. Not open to freshmen or to B. P. A. students. A survey of the general principles underlying economic activity. This is the basic course in economics for the American Civilization Program for students who are unable to take the more complete course provided in Econ. 31 and 32. (Smith, Staff.)

For Graduates and Advanced Undergraduates

Econ. 102. National Income Analysis. (3)

First and second semesters. Prerequisite, Econ. 32. Required for economics majors. An analysis of national income accounts and the level of national income and employment. (Hamberg, Staff.)

Econ. 130. Mathematical Economics. (3)

Second semester. Prerequisite, Econ. 102 and 132 or permission of instructor. A course designed to enable economics majors to understand the simpler aspects of mathematical economics. Those parts of the calculus and algebra required for economic analysis will be presented.

Econ. 131. Comparative Economic Systems. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism. (Gruchy, Dodge.)

Econ. 132. Advanced Economic Principles. (3)

First and second semesters. Prerequisite, Econ. 32. Required for economics majors. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition. (Knight.)

Econ. 134. Contemporary Economic Thought. (3)

First semester. Prerequisites, Econ. 32 and senior standing. Graduate students should take Econ. 232. A survey of recent trends in American, English, and continental economic thought with special attention to the work of such economists as W. C. Mitchell, J. R. Commons, T. Veblen, W. Sombart, J. A. Hobson and other contributors to the development of economic thought since 1900. (Gruchy.)

Econ. 136. International Economic Policies and Relations. (3)

First semester. Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade. Full consideration is given to contemporary problems facing international trade and to the impact of governmental policy upon international commercial relations.

Econ. 137. The Economics of National Planning. (3)

Second semester. Prerequisite, Econ. 32 or 37 and senior standing. Graduate students

should take Econ. 234. An analysis of the principles and practice of economic planning with special reference to the planning problems of Great Britain, Russia, and the United States. (Gruchy.)

Econ. 138. Economics of the Soviet Union. (3)

Second semester. Prerequisite, Econ. 32 or 37. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income. (Dodge.)

Econ. 140. Money and Banking. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. A study of the organization, functions, and operation of our monetary, credit, and banking system; the relation of commercial banking to the Federal Reserve System; the relation of money and credit to prices; domestic and foreign exchange and the impact of public policy upon banking and credit. (Gurley, Hamberg.)

Econ. 141. Theory of Money, Credit, and Prices. (3)

Second semester. Prerequisites, Econ. 32 and 140. A study of recent domestic and international monetary policies, their objectives and theoretical foundations. (Gurley.)

Econ. 142. Public Finance and Taxation. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. A study of government fiscal policy with special emphasis upon sources of public revenue, the tax system, government budgets, and the public debt. (Grayson.)

Econ. 147. Business Cycles. (3)

First semester. Prerequisite, Econ. 140. A study of the causes of depressions and unemployment, cyclical and secular instability, theories of business cycles, and the problem of controlling economic instability.

Econ. 149. International Finance and Exchange. (3)

Second semester. Prerequisite, Econ. 140; Econ. 136 recommended. This course considers the theory and practice of international finance and exchange. The increased importance of public authority in foreign trade, international policies, and finance is given due emphasis.

Econ. 160. Labor Economics. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail: wage theories, unemployment, social security, labor organization, and collective bargaining. (Dalton, Knight, Measday.)

Econ. 170. Monopoly and Competition. (3)

Second semester. Prerequisite, Econ. 32 or 37. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy. (Smith.)

Economics

Econ. 171. Economics of American Industries. (3)

Second semester. Prerequisite, Econ. 32 or 37. A study of the technology, economics and geography of twenty representative American industries. (Clemens.)

For Graduates

Econ. 200. Micro-Economic Analysis. (3)

First semester. Prerequisite, Econ. 132. Price, output, and distribution analysis as developed by Chamberlin, Triffin, Hicks and others. Considerable attention is given to contributions in periodicals.

Econ. 201. Advanced Micro-Economic Analysis. (3)

Second semester. Prerequisite, Econ. 200 or consent of instructor. A review and critical analysis of resource allocation and the theory of the firm, including recent developments in linear programming, activity analysis, and input-output analysis.

Econ. 202. Macro-Economic Analysis. (3)

Second semester. Prerequisite, Econ. 102 or equivalent. National income accounting; determination of national income and employment especially as related to the modern theory of effective demand; consumption function; multiplier and acceleration principles; the role of money as it affects output and employment as a whole; cyclical fluctuations. (Dillard.)

Econ. 204. Origins and Development of Capitalism. (3)

Study of the transition from feudalism to capitalism and the subsequent development of leading capitalist institutions in industry, agriculture, commerce, banking, and the social movement.

Econ. 205. Economic Development of Underdeveloped Areas. (3)

Principles, and problems of economic development in underdeveloped area; policies and techniques which hasten economic development. (Johnson.)

Econ. 206. Seminar in Economic Development. (3)

Prerequisite, Econ. 205 or consent of instructor. Problems and policies of economic development in specified underdeveloped areas. (Johnson.)

Econ. 230. History of Economic Thought. (3)

First semester. Prerequisite, Econ. 132 or consent of instructor. A study of the development of economic thought and theories including the Greeks, Romans, canonists, mercantilists, physiocrats, Adam Smith, Malthus, Ricardo. Relation of ideas to economic policy. (Dillard.)

Econ. 231. Economic Theory in the Nineteenth Century. (3)

Second semester. Prerequisite, Econ. 230 or consent of the instructor. A study of various nineteenth and twentieth century schools of economic thought, particularly the classicists, neo-classicists, Austrians, German historical school, American economic thought and the socialists. (Dillard.)

Econ. 232, 233. Seminar in Institutional Economic Theory. (3, 3)

First and second semesters. A study of recent developments in the field of institutional economic theory in the United States and abroad. (Gruchy.)

Econ. 234. Economic Growth in Mature Economies. (3)

Given in sequence with Econ. 232 and 233. Analysis of policies and problems for achieving stable economic growth in mature economies such as the United States, the United Kingdom, and the Scandinavian countries. (Gruchy.)

Econ. 236. Seminar in International Economic Relations. (3)

(Arranged.) A study of selected problems in International Economic Relations.

Econ. 237. Special Seminar in Economic Growth and Development. (3)

Visiting academic and government economists who are specialists in various aspects of economic growth and development will address the seminar on special topics. Students may enroll for credit and write papers under the supervision of the faculty member directing the seminar.

Econ. 238. Seminar in Economic Development of the Soviet Union. (3)

Prerequisite, Econ. 138 or consent of instructor. Measurement and evaluations of Soviet economic development including interpretation and use of Soviet statistics, measurement of national income and rates of growth, fiscal and monetary policies, investment policies and technological change, planning and economic administration, manpower and wage policies, foreign trade and foreign aid policies, intra-Bloc relations, and selected topics in Bloc development. (Dodge.)

Econ. 240. Seminar in Monetary Theory and Policy. (3)

Theories of money, prices, and national income with emphasis on recent developments. Monetary theories of income fluctuations. Domestic and international monetary policies. (Gurley.)

Econ. 242. Public Finance and Fiscal Policy. (3)

Prerequisite, Econ. 142 or consent of instructor. Taxation, public expenditures, and public debt; the use of fiscal policy as a stabilization device against inflation and recession.

Econ. 247. Economic Growth and Instability. (3)

Second semester. An analytical study of long-term economic growth in relation to short-term cyclical instability. Attention is concentrated on the connection between accumulation of capital and the capital requirements of secular growth and business cycles. Earlier writings as well as recent growth models are considered. (Hamberg.)

Econ. 248. The Economics of Technical Change. (3)

Second semester. Prerequisite, consent of instructor. A study of the determinants and impact of inventions and innovations. Attention is given to the qualitative and quantitative aspects of technical change, both at the micro-economic and macro-economic levels, and under different conditions of economic development. (Hamberg.)

Econ. 270. Seminar in Economics and Geography of American Industries. (3)

(Arranged.) (Clemens.)

Econ. 399. Thesis.

(Arranged.)

GEOGRAPHY

Professors: VAN ROYEN, HU, AUGELLI.

Consulting Professors: ROTERUS AND MC BRYDE.

Lecturer with rank of Professor: LEMONS

Lecturers: VAN BERGEN VAN DER GRIJP, AND WIEDEL.

Assistant Professors: AHNERT, CURRY, DESHLER, AND MC ARTHUR.

Instructor: ANDERSON.

Research Associate: SYME.

Research Assistants: BLENK, KARSBERG, AND THOMAS.

Geog. 1, 2, Economic Resources. (2, 2)

First and second semesters. One lecture and one two-hour laboratory period a week for Geog. 1; two lecture periods for Geog. 2. Freshman requirements in the business administration curriculums. General comparative study of the geographic factors underlying production economics. Emphasis upon climate, soils, land forms, agricultural products, power resources, and major minerals, concluding with brief survey of geography of commerce and manufacturing. (Deshler, Staff.)

Geog. 10, 11. General Geography. (3, 3)

First and second semesters. Required of all majors in geography; recommended for all minors; Geog. 10 is suggested for students of Arts and Sciences, Education and others who may desire a background in geography and its application to problems of their respective fields. Introduction to geography as a field of study. A survey of the content, philosophy, techniques, and application of geography and its significance for the understanding of world problems. (Augelli, Deshler.)

Geog. 20, 21. Economic Geography. (3, 3)

(Not offered on College Park campus.)

Geog. 30. Principles of Morphology. (3)

First semester. A study of the physical features of the earth's surface and their geographic distribution, including subordinate land forms. Major morphological processes, the development of land forms, and the relationships between various types of land forms and land use problems. (Ahnert.)

Geog. 35. Map Interpretation and Map Problems. (3)

First and second semesters. Interpretation of landforms and man-made features on American and foreign maps. Functions, use, and limitations of various types of maps, with emphasis upon topographic maps. Problems of use and interpretation. (Ahnert.)

Geog. 40. Principles of Meteorology. (3)

First and second semesters. An introductory study of the weather. Properties and conditions of the atmosphere, and methods of measurement. The atmospheric circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications. (Curry, Ahnert.)

Geog. 41. Introductory Climatology. (3).

Second semester. Prerequisite, Geog. 40, or permission of the instructor. Climatic elements and their controls, the classification and distribution of world climates and relevance of climatic differences to human activities. (Curry.)

Geog. 42S. Weather and Climate. (2)

Summer only. An introduction to the principal causes of the weather and the major types of climate, with special emphasis upon North America.

For Graduates and Advanced Undergraduates

Geog. 100. Regional Geography of Eastern Anglo-America. (3)

Second semester. Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background. (McArthur.)

Geog. 101. Regional Geography of Western Anglo-America. (3)

Second semester. Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of western United States, western Canada and Alaska along the lines mentioned under Geog. 100. (McArthur.)

Geog. 102S. Geography of the United States. (2)

Summer only. Permission of instructor. A general study of the regions and resources of the United States in relation to agricultural and industrial development and to present-day national problems.

Geog. 103. Geographic Concepts and Source Materials. (3)

First semester. A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

Geog. 104. Geography of Major World Regions. (3)

Second semester. A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the causal factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

Geog. 105. Geography of Maryland and Adjacent Areas. (3)

First and second semesters. Prerequisite, permission of the instructor. An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the state of Maryland and adjacent areas.

Geog. 106S. Geography of Maryland. (2)

Summer only. Permission of instructor. The geographic regions of Maryland and their principal characteristics, especially in relation to the development of home studies and other projects.

Geog. 110. Economic and Cultural Geography of Caribbean America. (3)

First semester. An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Columbia and Venezuela. (Augelli.)

Geography

Geog. 111. Economic and Cultural Geography of South America. (3)

First semester. A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries. (Augelli.)

Geog. 120. Economic Geography of Europe. (3)

First semester. The natural resources of Europe in relation to agricultural and industrial development and to present-day economic and national problems. (Ahnert, Van Royen.)

Geog. 122. Economic Resources and Development of Africa. (3)

Second semester. The natural resources of Africa in relation to agricultural and mineral production; the various stages of economic development and the potentialities of the future. (Deshler.)

Geog. 123. Problems of Colonial Geography. (3)

First and second semesters. Problems of development of colonial areas, with special emphasis upon the development of tropical regions and the possibilities of white settlement in the tropics.

Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia. (3, 3)

First and second semesters. A study of China, Japan, India, Burma, Indo-China, and the East Indies; natural resources, population, and economic activities. Comparisons of physical and human potentialities of major regions and of their economic, social and political development. (Hu.)

Geog. 134, 135. Cultural Geography of East Asia. (3, 3)

First and second semesters. A comprehensive and systematic survey of the geographical distribution and interpretation of the major racial groups and cultural patterns of China, Japan, and Korea. Special emphasis will be placed on the unique characteristics of the peoples of these areas, their basic cultural institutions, outlooks on life, contemporary problems, and trends of cultural change. Designed especially for students of the social sciences, and those preparing for careers in foreign service, foreign trade, education, and international relations. (Hu.)

Geog. 140. Soviet Lands. (3)

First and second semesters. The natural environment and its regional diversity. Geographic factors in the expansion of the Russian state. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population. (Anderson)

Geog. 146. The Near East. (3)

First semester or second semester. The physical, economic, political, and strategic geography of the lands between the Mediterranean and India.

Geog. 150. History and Theory of Cartography. (3)

First semester. The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use and limitations.

Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types.
(van Bergen van der Grijp.)

Geog. 151, 152. Cartography and Graphics Practicum. (3, 3)

First and second semesters. One hour lecture and two two-hour laboratory periods a week. Techniques and problems of compilation, design, and construction of various types of maps and graphs. Relationships between map making and modern methods of production and reproduction. Trips to representative plants. Laboratory work directed toward cartographic problems encountered in the making of nontopographic maps.
(Wiedel.)

Geog. 153. Problems of Cartographic Representation and Procedure. (3)

First and second semesters. Two hours lecture and two hours laboratory a week. Study of cartographic compilation methods. Principles and problems of symbolization, classification, and representation of map data. Problems of representation of features at different scales and for different purposes. Place-name selection and lettering; stick-up and map composition.
(van Bergen van der Grijp.)

Geog. 154. Problems of Map Evaluation. (3)

First or second semester. Two hours lecture and two hours laboratory a week. Schools of topographic concepts and practices. Theoretical and practical means of determining map reliability, map utility, and source materials. Nature, status, and problems of topographic mapping in different parts of the world. Non-topographic special use maps. Criteria of usefulness for purposes concerned and of reliability.
(Wiedel.)

Geog. 155. Problems and Practices of Photo Interpretation. (3)

First and second semester. Two hours of lecture and two hours of laboratory per week. Interpretation of aerial photographs with emphasis on the recognition of land-forms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation.
(Ahnert.)

Geog. 160. Advanced Economic Geography I. Agricultural Resources. (3)

First semester. Prerequisite, Geog. 1 and 2 or Geog. 10. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to physical environment and economic geographic conditions. Main problems of conservation. (Van Royen.)

Geog. 161. Advanced Economic Geography II. Mineral Resources. (3)

Second semester. Prerequisite, Geog. 1 and 2, or Geog. 10. The nature and geographic distribution of the principal power, metallic and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation.
(Van Royen.)

Geog. 170. Local Field Course. (3)

First semester. Training in geographic field methods and techniques. Field observation of land use in selected rural and urban areas in eastern Maryland. One lecture per week with Saturday and occasional weekend field trips. Primarily for undergraduates.
(Ahnert.)

Geography

Geog. 180. History, Nature and Methodology of Geography. (3)

First semester. A comprehensive and systematic study of the history, nature, and basic principles of geography, with special reference to the major schools of geographic thought; a critical evaluation of some of the important geographical works and methods of geographic research. (Hu.)

Geog. 190. Political Geography. (3)

Second semester. Geographical factors in national power and international relations; an analysis of the role of "geopolitics" and "geostrategy," with special reference to the current world scene. (Augelli.)

Geog. 195. Geography of Transportation. (3)

Second semester. The distribution of transport routes on the earth's surface; patterns of transport routes; the adjustment of transport routes and media to conditions of the natural environment centers and their distribution. (McArthur.)

Geog. 197. Urban Geography. (3)

First semester. Origins of cities, followed by a study of elements of site and location with reference to cities. The patterns and functions of some major world cities will be analyzed. Theories of land use differentiation within cities will be appraised. (McArthur.)

Geog. 199. Topical Investigations. (1-3)

First and second semesters. Independent study under individual guidance. Choice of subject matter requires joint approval of adviser and Head of the Department of Geography. Restricted to advanced undergraduate students with credit for at least 24 hours of geography. (Staff.)

For Graduates

Geog. 200. Field Course. (3)

Field work in September, conferences and reports during first semester. Practical experience in conducting geographic field studies. Intensive training in field methods and techniques and in the preparation of reports. For graduate students in geography. Open to other students by special permission of the Head of the Department of Geography. (Staff.)

Geog. 210, 211. Seminar in the Geography of Latin America. (3, 3)

First and second semesters. Prerequisite, Geog. 110, 111 or consent of instructor. An analysis of recent changes and trends in industrial development, exploitation of mineral resources, and land utilization. (Augelli.)

Geog. 220, 221. Seminar in the Geography of Europe and Africa. (3, 3)

First and second semesters. Prerequisite, Geog. 120 or 122, or consent of instructor. Analysis of special problems concerning the resources and development of Europe and Africa. (Van Royen, Deshler.)

Geog. 230, 231. Seminar in the Geography of East Asia. (3, 3)

First and second semesters. Analysis of problems concerning the geography of East Asia with emphasis on special research methods and techniques applicable to the problems of this area. (Hu.)

Geog. 240, 241. Seminar in the Geography of the U.S.S.R. (3, 3)

First and second semesters. Investigation of special aspects of Soviet geography. Emphasis on the use of Soviet materials. Prerequisite, reading knowledge of Russian and Geog. 140, or consent of instructor.

Geog. 246. Seminar in the Geography of the Near East. (3)

First and second semesters.

Geog. 250. Seminar in Cartography. (Credit arranged)

First and second semesters. The historical and mathematical background of cartographic concepts, practices, and problems, and the various philosophical and practical approaches to cartography. Discussions will be supplemented by the presentation of specific cartographic problems investigated by the students.

(McBryde, van Bergen van der Grijp.)

Geog. 260. Advanced General Climatology. (3)

First semester. Prerequisite, Geog. 41, or consent of instructor. Advanced study of elements and controls of the earth's climates. Principles of climatic classification. Special analysis of certain climatic types.

(Lemons.)

Geog. 261. Applied Climatology. (3)

Second semester. Prerequisite, Geog. 41, or consent of instructor. Study of principles, techniques, and data of micro-climatology, physical and regional climatology relating to such problems and fields as transportation, agriculture, industry, urban planning, human comfort, and regional geographic analysis.

(Lemons.)

Geog. 262, 263. Seminar in Meteorology and Climatology. (3, 3)

First and second semesters. Prerequisite, consent of instructor. Selected topics in meteorology and climatology chosen to fit the individual needs of advanced students.

(Lemons.)

Geog. 280. Geomorphology. (3)

Second semester. An advanced comparative study of selected geomorphic processes and land forms; theories of land forms evolution and geomorphological problems.

(Van Royen.)

Geog. 290, 291. Selected Topics in Geography. (1-3)

First and second semesters. Readings and discussion on selected topics in the field of geography. To be taken only with joint consent of adviser and Head of the Department of Geography.

(Staff.)

Geog. 399. Dissertation Research (Credit to be arranged)

First and second semesters and summer.

(Staff.)

GOVERNMENT AND POLITICS

Professors: PLISCHKE, BURDETTE, DILLON AND STEINMEYER.

Associate Professors: ANDERSON, HARRISON AND HATHORN.

Assistant Professors: BYRD, O'DONNELL AND MCNELLY.

Instructors: ALPERIN AND LEE.

Lecturers: BEALS, LARSON, AND LOVELACE.

G. & P. 1. American Government. (3)

Each semester. This course is designed as the basic course in government for the American Civilization Program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

G. & P. 3. Principles of Government and Politics. (3)

Each semester. A study of the basic principles and concepts of political science.

G. & P. 4. State Government and Administration. (3)

Each semester. Prerequisite. G. & P. 1. A study of the organization and functions of state government in the United States, with special emphasis upon the government of Maryland.

G. & P. 5. Local Government and Administration. (3)

Each semester. Prerequisite, G. & P. 1. A study of the organization and functions of local government in the United States, with special emphasis upon the government of Maryland cities and counties.

G. & P. 7. The Government of the British Commonwealth. (2)

First semester. Prerequisite, G. & P. 1. A study of the governments of the United Kingdom and the British Dominions.

G. & P. 8. The Governments of Continental Europe. (2)

Second semester. Prerequisite, G. & P. 1. A comparative study of the governments of France, Switzerland, Italy, Germany, and the Scandinavian countries.

G. & P. 9. The Governments of Latin America. (2)

First semester. Prerequisite, G. & P. 1. A comparative study of Latin American governments, with special emphasis on Argentina, Brazil, Chile, and Mexico.

G. & P. 10. The Governments of the Far East. (2)

Second semester. Prerequisite, G. & P. 1. A study of the governments of China and Japan.

G. & P. 97. Major Foreign Governments. (3)

Prerequisite, G. & P. 1. An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in G. & P. 7, 8, or 10.

For Graduates and Advanced Undergraduates

G. & P. 101. International Political Relations. (3)

Each semester. Prerequisite, G. & P. 1. A study of the major factors underlying

international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.

G. & P. 102. *International Law*. (3)

Second Semester. Prerequisite, G. & P. 1. Fundamental principles governing the relation of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.

G. & P. 104. *Inter-American Relations*. (3)

Prerequisite, G. & P. 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

G. & P. 105. *Recent Far Eastern Politics*. (3)

Each semester. Prerequisite, G. & P. 1. The background and interpretation of recent political events in the Far East and their influence on world politics.

G. & P. 106. *American Foreign Relations*. (3)

First semester. Prerequisite, G. & P. 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

G. & P. 108. *International Organization*. (3)

Second semester. Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.

G. & P. 110. *Principles of Public Administration*. (3)

First semester. Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.

G. & P. 111. *Public Personnel Administration*. (3)

First semester. Prerequisite, G. & P. 110 or B.A. 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations, and retirement.

G. & P. 112. *Public Financial Administration*. (3)

Second semester. Prerequisite, G. & P. 110 or Econ. 142. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.

G. & P. 124. *Legislatures and Legislation*. (3)

Second semester. Prerequisite, G. & P. 1. A comprehensive study of legislative organization, procedure, and problems. The course includes opportunities for student contact with Congress and with the Legislature of Maryland.

G. & P. 131, 132. Constitutional Law. (3, 3)

First and second semesters. Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

G. & P. 133. Administration of Justice. (3)

Second semester. Prerequisite, G. & P. 1. An examination of civil and criminal court structure and procedures in the United States at all levels of government, with special emphasis upon the federal judiciary.

G. & P. 141. History of Political Theory. (3)

First semester. Prerequisite, G. & P. 1. A survey of the principal political theories set forth in the works of writers from Plato to Bentham.

G. & P. 142. Recent Political Theory. (3)

Second semester. Prerequisite, G. & P. 1. A study of 19th and 20th century political thought, with special emphasis on recent theories of socialism, communism, and fascism.

G. & P. 144. American Political Theory. (3)

First semester. Prerequisite, G. & P. 1. A study of the development and growth of American political concepts from the colonial period to the present.

G. & P. 154. Problems of World Politics. (3)

Each semester. Prerequisite, G. & P. 1. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.

G. & P. 174. Political Parties. (3)

First semester. Prerequisite, G. & P. 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

G. & P. 178. Public Opinion. (3)

Each semester. Prerequisite, G. & P. 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

G. & P. 181. Administrative Law. (3)

Second semester. Prerequisite, G. & P. 1. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.

G. & P. 191. The Government and Administration of the Soviet Union. (3)

First semester. Prerequisite, G. & P. 1. A study of the adoption of the communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.

G. & P. 197. Comparative Governmental Institutions. (3)

Second semester. Prerequisite, G. & P. 1. A study of major political institutions, such

as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

For Graduates

G. & P. 201. *Seminar in International Political Organization.* (3)

A study of the forms and functions of various international organizations.

G. & P. 202. *Seminar in International Law.* (3)

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

G. & P. 205. *Seminar in American Political Institutions.* (3)

Reports on topics assigned for individual study and reading in the background and development of American government.

G. & P. 206. *Seminar in American Foreign Relations.* (3)

Reports on selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

G. & P. 207. *Seminar in Comparative Governmental Institutions.* (3)

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

G. & P. 211. *Seminar in Federal-State Relations.* (3)

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

G. & P. 213. *Problems of Public Administration.* (3)

Reports on topics assigned for individual study and reading in the field of public administration.

G. & P. 214. *Problems of Public Personnel Administration.* (3)

Reports on topics assigned for individual study and reading in the field of public personnel administration.

G. & P. 215. *Problems of State and Local Government in Maryland.* (3)

Reports on topics assigned for individual study in the field of Maryland state and local government.

G. & P. 216. *Government Administrative Planning and Management.* (3)

Reports on topics assigned for individual study and reading in administrative planning and management in government.

G. & P. 217. *Government Corporations and Special Purpose Authorities.* (3)

Reports on topics assigned for individual study and reading in the use of the corporate form for governmental administration. The topics for study will relate to the use of the corporate form as an administrative technique, as in the cases of the Tennessee Valley Authority, the Port of New York Authority, and local housing authorities.

Government and Politics

G. & P. 221. Seminar in Public Opinion. (3)

Reports on topics assigned for individual study and reading in the field of public opinion.

G. & P. 223. Seminar in Legislatures and Legislation. (3)

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

G. & P. 224. Seminar in Political Parties and Politics. (3)

Reports on topics assigned for individual study and reading in the fields of political organization and action.

G. & P. 225. Man and the State. (3)

Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.

G. & P. 231. Seminar in Public Law. (3)

Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.

G. & P. 251. Bibliography of Government and Politics. (3)

Survey of the literature of the various fields of government and politics and instruction in the use of government documents.

G. & P. 252. Problems of Democracy: National I. (3)

Summer session only.

G. & P. 253. Problems of Democracy: International I. (3)

Summer session only.

G. & P. 254. Problems of Democracy: National II. (3)

Summer session only.

G. & P. 255. Problems of Democracy: International II. (3)

Summer session only.

G. & P. 261. Problems of Government and Politics. (3)

Credit according to work accomplished.

G. & P. 281. Departmental Seminar. (No credit)

Topics as selected by the graduate staff of the Department. Registration for two semesters required of all doctoral candidates. Conducted by the entire Departmental staff in full meeting.

G. & P. 399. Thesis.

(Arranged).

JOURNALISM AND PUBLIC RELATIONS

Professor: CROWELL.

Associate Professor: NEWSOM.

Assistant Professors: BEDFORD AND BRYAN.

Lecturers: HOGAN AND VINOCOUR.

JOURNALISM COURSES

Journ. 10. Introduction to Journalism. (3)

Two lectures, two laboratory hours each week. Prerequisites, at least average grade of "C" in Eng. 1 and 2; ability to type 30 words per minute. Laboratory fee, \$3.00. Survey of journalism. Laboratory time spent in writing news-story exercises assigned by instructor. "B" in Journ. 10 or 11 is prerequisite, for majors in this Department, to all upper-division courses in the Department.

Journ. 11. News Reporting. (3)

Each semester. Two lectures, two laboratory hours each week. Prerequisite, Journ. 10. Laboratory fee, \$3.00. More specialized types of news stories.

Journ. 101. Radio News Reporting. (2)

Second semester. One lecture and two laboratory hours each week. Laboratory fee, \$3.00. Theory and practice in radio news reporting.

Journ. 160. News Editing. I. (3)

Each semester. Two lectures, two hours of laboratory each week. Laboratory fee, \$3.00. Copy editing, proofreading, headline writing.

Journ. 161. News Editing II. (3)

Second semester. Two lectures, three hours of laboratory work on *Baltimore Sun* or *Baltimore News-Post* desk each week, arranged. Headwriting, makeup, rewriting, copy editing.

Journ. 162. Community Journalism. (3)

Each semester. One lecture, four hours of laboratory work on a weekly newspaper each week, arranged. Introduction to community and weekly newspaper.

Journ. 163. Newspaper Typography. (3)

First semester. Introduction to newspaper typography, practice in laying out and making up advertisements and newspaper pages.

Journ. 165. Feature Writing. (3)

Each semester. Writing and selling of newspaper and magazine articles.

Journ. 173. Scholastic Journalism. (2)

Summer. Introduction to theory and practice in production of high school and junior high publications.

Journ. 174. Editorial Writing. (2)

Second semester. Theory and practice in editorial writing.

Journ. 175. Reporting of Public Affairs. (3)

First semester. One lecture, four hours of laboratory time spent each week on regular

Journalism and Public Relations

beat for *Baltimore Sun* or *Baltimore News-Post*, by arrangement. Advanced reporting; city, county, federal beats.

Journ. 176. Newsroom Problems. (3)

First semester. Three lectures per week. Ethics, newsroom problems and policies, freedom and responsibilities of the press.

Journ. 181. Press Photography. (3)

First and second semesters. One lecture, four hours of laboratory each week. Prerequisite, junior major standing in the Department. Laboratory fee, \$6.00, provides demonstration supplies, maintenance. Shooting, developing, printing of news and feature pictures. Equipment provided by University. Student furnishes own supplies needed in course.

Journ. 182. Advanced Press Photography. (2)

First semester. One lecture, two hours of laboratory per week. Prerequisite, *Journ. 181* or equivalent. Advanced shooting, developing, printing of news and feature pictures. Equipment provided by University. Student furnishes own supplies needed in course.

Journ. 184. Picture Editing. (2)

Second semester. Prerequisite, *Journ. 181*. Theories and exercises in handling pictures for the press.

Journ. 191. Law of the Press. (3)

Second semester. Prerequisite, senior standing. Non-legal introduction to libel, right of privacy, fair comment and criticism, privilege, contempt by publication, Maryland press statutes.

Journ. 192. History of American Journalism. (3)

First semester. Historical background of American journalism.

Journ. 193. The World's News Press. (2)

Second semester. Survey of history and status of news press throughout the world.

Journ. 196. Problems in Journalism. (2)

Second semester. Group and individual projects in problems of journalism.

Journ. 197S. Supervised Internship. (0)

Summer Session. To be taken following junior year as major in this department, upon permission of instructor. Ten weeks of organized, supervised study, experience, on-the-job training in journalism.

PUBLIC RELATIONS COURSES

P. R. 166. Public Relations. (3)

Each semester. Survey of public relations, general orientation, principles, techniques.

P. R. 170. Publicity Techniques. (3)

Each semester. Prerequisite, *P. R. 166*. Strategy and techniques of publicity operations. Orientation, practice in use of major media of public communications.

P. R. 171. Industrial Journalism. (2)

Second semester. Prerequisite for public relations majors, senior standing. Introduction

to industrial communications, management and production of company publications, public relations aspects of industrial journalism.

P. R. 186. Public Relations of Government. (3)

Second semester. Prerequisite, P. R. 166. Study of public relations, publicity, propaganda, information services in public administration.

P. R. 194. Public Relations Cases. (2)

First semester. Prerequisite, P. R. 166. Study of cases in public relations, with particular attention to policy formulation, strategy, ethical factors.

P. R. 195. Seminar in Public Relations. (2)

Each semester. Group and individual research in public relations.

P. R. 197S. Supervised Internship. (0)

Summer session. To be taken following junior year as major in this department, upon permission of instructor. Ten weeks of organized, supervised study, experience, on-the-job training in public relations.

OFFICE MANAGEMENT AND TECHNIQUES

Professor: PATRICK.

Instructors: ANDERSON, BROWN, CARVER AND O'NEILL.

O. T. 1. Principles of Typewriting. (2)

First and second semesters. Five periods per week. Prerequisite, consent of instructor. Laboratory fee, \$7.50. The goal of this course is the attainment of the ability to operate the typewriter continuously with reasonable speed and accuracy by the use of the "touch" system.

O. T. 2. Intermediate Typewriting. (2)

First and second semesters. Five periods per week. Prerequisite, minimum grade of "C" in O. T. 1 or consent of instructor. Laboratory fee, \$7.50. Drills for improving speed and accuracy and an introduction to office production typewriting. This course must be completed prior to enrollment in O. T. 16.

O. T. 10. Office Typewriting Problems. (2)

First and second semesters. Five periods per week. Prerequisite, minimum grade of "C" in O. T. 2 or consent of instructor. Laboratory fee, \$7.50. A course to develop the higher degree of accuracy and speed possible and to teach the advanced techniques of typewriting with special emphasis on production.

O. T. 12, 13. Principles of Shorthand. (3, 3)

Prerequisite, consent of instructor. Five periods per week. This course aims to develop the mastery of the principles of Gregg Shorthand. In O. T. 13 special emphasis is placed on developing dictation speed.

O. T. 16, 18. Advanced Gregg Shorthand. (2, 2)

Five periods per week. Prerequisite, minimum grade of "C" in O. T. 2 and O. T. 13 or consent of instructor. O. T. 17 and O. T. 19 must be taken concurrently with

Office Management and Techniques

O. T. 16 and 18 respectively. Emphasis is placed on vocabulary development and new matter dictation for sustained speed at the highest level possible under varying conditions. O. T. 18 is a continuation of background knowledge and an intensive development of recording skills through office-style dictation and vocational dictation based on terminology used in various types of businesses.

O. T. 17, 19. Problems in Gregg Transcription. (2, 2)

Four periods per week. Prerequisite, minimum grade of "C" in O. T. 2 and O. T. 13 or consent of instructor. Laboratory fee, per semester, \$7.50. O. T. 16 and 18 must be taken concurrently with O. T. 17 and O. T. 19 respectively. A course designed to build speed, accuracy and correct form in the transcription of shorthand notes. Transcription is under timed conditions with emphasis on production involving quantity and quality in the finished product. O. T. 19 is a continued integration of the knowledge and skills previously attained with particular emphasis on transcriptional problems.

O. T. 110. Administrative Secretarial Procedures. (3)

First semester. Prerequisite, O. T. 18 and 19 or consent of the instructor. The nature of office work; the secretary's function in communication, inter-company and public relations, handling records, supplies and equipment; and in direction of the office staff. Standardization and simplification of office forms and procedures in relation to correspondence, mailing, receiving callers, telephoning, handling conferences, and securing business information. Business etiquette and ethics.

O. T. 114. Secretarial Office Practice. (3)

First and second semesters. Six periods per week. Prerequisite, senior standing and completion of O. T. 110. The purpose of this course is to give laboratory and office experience to senior students. A minimum of 90 hours of office experience under supervision is required. In addition, each student will prepare a written report on an original problem previously approved.

FACULTY
1960-1961
COLLEGE OF
BUSINESS AND PUBLIC ADMINISTRATION

Administrative Officers

J. FREEMAN PYLE, *Professor of Marketing and Economics and Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

JAMES H. REID, *Professor of Marketing and Assistant Dean of the College of Business and Public Administration*

B.S., University of Iowa, 1923; M.A., American University, 1933.

Professors

JOHN P. AUGELLI, *Professor of Geography*

B.A., Clark University, 1943; M.A., Harvard University, 1949; PH.D., 1951.

FRANKLIN L. BURDETTE, *Professor of Government and Politics, and Director of the Bureau of Governmental Research*

A.B., Marshall College, 1934; M.A., University of Nebraska, 1935; M.A., Princeton University, 1937; PH.D., 1938; LL.D., Marshall College, 1959.

CHARLES E. CALHOUN, *Professor of Finance*

A.B., University of Washington, 1925; M.B.A., 1930.

ELI W. CLEMENS, *Professor of Business Administration*

B.S., Virginia Polytechnic Institute, 1930; M.S., University of Illinois, 1934; PH.D., University of Wisconsin, 1940.

J. ALLAN COOK, *Professor of Marketing*

B.A., College of William and Mary, 1928; M.B.A., Harvard University, 1936; PH.D., Columbia University 1947.

JOHN H. COVER, *Professor and Director of the Bureau of Business and Economic Research*

B.S., Columbia University, 1915; A.M., 1919; PH.D., 1927.

ALFRED A. CROWELL, *Professor and Head of the Department of Journalism and Public Relations*

A.B., University of Oklahoma, 1929; M.A., 1934; M.S.J., Northwestern University, 1940.

DUDLEY DILLARD, *Professor and Head of the Department of Economics*

B.S., University of California, 1935; PH.D., 1940.

CONLEY H. DILLON, *Professor of Government and Politics*

B.A., Marshall College, 1928; M.A., Duke University, 1933; PH.D., 1936.

ALLAN J. FISHER, *Professor of Accounting and Finance*

B.S., Wharton School of Finance and Commerce, 1928; LITT.M., University of Pittsburgh, 1936; PH.D., 1937.

Faculty

JOHN H. FREDERICK, *Professor and Head of the Department of Business Organization*

B.S., Wharton School of Finance and Commerce, 1918; M.A., University of Pennsylvania, 1925; PH.D., 1927.

DWIGHT L. GENTRY, *Professor of Marketing*

A.B., Elon College, 1941; M.B.A., Northwestern University, 1947; PH.D., University of Illinois, 1952.

ALLAN G. GRUCHY, *Professor of Economics*

B.A., University of British Columbia, 1926; M.A., McGill University, 1928; PH.D., University of Virginia, 1931.

JOHN G. GURLEY, *Professor of Economics*

B.A., Stanford University, 1942; PH.D., 1951.

DANIEL HAMBERG, *Professor of Economics*

B.S., University of Pennsylvania, 1945; M.A., 1947; PH.D., 1952.

CHARLES Y. HU, *Professor of Geography*

B.S., University of Nanking, China, 1930; M.A., University of California, 1936; PH.D., University of Chicago, 1941.

ARTHUR S. PATRICK, *Professor of Office Management and Business Education*

B.S., Wisconsin State College, 1931; M.A., University of Iowa, 1940; PH.D., American University, 1956.

ELMER PLISCHKE, *Professor and Head of the Department of Government and Politics*

PH.B., Marquette University, 1937; M.A., American University, 1938; PH.D., Clark University, 1943.

REUBEN G. STEINMEYER, *Professor of Government and Politics*

A.B., American University, 1929; PH.D., 1935.

CHARLES T. SWEENEY, *Professor of Accounting*

B.S., Cornell University, 1921; M.B.A., University of Michigan, 1928; C.P.A., Iowa, 1934; Ohio, 1936.

HAROLD F. SYLVESTER, *Professor of Personnel Administration*

PH.D., The Johns Hopkins University, 1938.

CHARLES A. TAFF, *Professor of Transportation*

B.S., University of Iowa, 1937; M.A., 1941; PH.D., University of Maryland, 1952.

WILLIAM VAN ROYEN, *Professor and Head of the Department of Geography*

M.A., Rijksuniversiteit Utrecht, 1925; PH.D., Clark University, 1928.

SILVERT M. WEDEBERG, *Professor of Accounting*

B.B.A., University of Washington, 1925; C.P.A., Maryland, 1934; A.M., Yale University, 1935.

HOWARD W. WRIGHT, *Professor of Accounting*

B.S., Temple University, 1937; M.A., University of Iowa, 1940; C.P.A., Texas, 1940;
PH.D., University of Iowa, 1947.

Consulting Professor

F. WEBSTER MC BRYDE, *Consulting Professor of Geography*

B.A., Tulane, 1930; PH.D., University of California, 1940.

VICTOR ROTERUS, *Consulting Professor of Geography*

PH.D., University of Chicago, 1930; M.S., 1931.

Associate Professors

THORNTON H. ANDERSON, *Associate Professor of Government and Politics*

A.B., University of Kentucky, 1937; M.A., 1938; PH.D., University of Wisconsin, 1948.

JOHN H. CUMBERLAND, *Associate Professor and Assistant Director of the Bureau of Business and Economic Research*

B.A., University of Maryland, 1947; M.A., Harvard University, 1949; PH.D., 1951.

TOWNES L. DAWSON, *Associate Professor of Business Law*

B.B.A., University of Texas, 1943; B.A., U. S. Merchant Marine Academy, 1946;
M.B.A., University of Texas, 1947; PH.D., 1950; LL.B., 1954.

HENRY W. GRAYSON, *Associate Professor of Economics*

B.A., University of Saskatchewan, 1937; M.A., University of Toronto, 1947; PH.D., 1950.

MORACE V. HARRISON, *Associate Professor of Government and Politics*

B.A., Trinity University, Texas, 1932; M.A., University of Texas, 1941; PH.D., 1951.

GUY B. HATHORN, *Associate Professor of Government and Politics*

B.A., University of Mississippi, 1940; M.A., 1942; PH.D., Duke University, 1950.

BOYD L. NELSON, *Associate Professor of Statistics*

B.A., University of Wisconsin, 1947; M.A., 1948; PH.D., 1952.

D. EARL NEWSOM, *Associate Professor of Journalism and Director of the Sequence in Editorial Journalism*

B.S., Oklahoma State University, 1948; M.S.J., Northwestern University, 1949; ED.D., Oklahoma State University, 1957.

CLINTON SPIVEY, *Associate Professor of Industrial Management*

B.S., University of Illinois, 1946; M.S., 1947; PH.D., 1957.

Assistant Professors

FRANK O. AHNERT, *Assistant Professor of Geography*

DR. PHIL., Heidelberg University, 1953.

Faculty

Assistant Professors

HENRY ANDERSON, *Assistant Professor of Statistics*

B.A., University of London, 1939; M.B.A., Columbia University, 1948; PH.D., 1959.

ROY ASHMEN, *Assistant Professor of Marketing*

B.S., Drexel Institute of Technology, 1935; M.S., Columbia University, 1936; PH.D., Northwestern University, 1950.

JIMMY B. BEDFORD, *Assistant Professor of Journalism*

A.B., University of Missouri, 1950; B.J., 1951; M.A., 1952.

CARTER R. BRYAN, *Assistant Professor of Journalism*

B.A., University of California, 1937; PH.D., University of Vienna, Austria, 1940.

ELBERT M. BYRD, JR., *Assistant Professor of Government and Politics*

B.S., American University, 1953; M.A., 1954; PH.D., 1959.

LESLIE CURRY, *Assistant Professor of Geography*

B.A., University of Durham, 1949; M.A., Johns Hopkins University, 1951; PH.D., University of Auckland, 1959.

JOHN A. DAIKER, *Assistant Professor of Accounting*

B.S., University of Maryland, 1941; M.B.A., 1951; C.P.A., District of Columbia, 1949.

JOHN H. DALTON, *Assistant Professor of Economics*

A.B., University of California, 1943; PH.D., 1955.

WALTER W. DESHLER, *Assistant Professor of Geography*

B.S., Lafayette College, 1943; M.A., University of Maryland, 1952; PH.D., 1957.

NORTON T. DODGE, *Assistant Professor of Economics*

A.B., Cornell University, 1948; M.A., Harvard University, 1951; PH.D., 1960.

CHARLES B. EDELSON, *Assistant Professor of Accounting*

B.B.A., University of New Mexico, 1949; M.B.A., Indiana University, 1950; C.P.A., Maryland, 1951.

ROBERT E. L. KNIGHT, *Assistant Professor of Economics*

A.B., Harvard University, 1948; PH.D., University of California, 1958.

LEROY L. LEE, *Assistant Professor of Accounting*

A.B., George Washington University, 1948; A.M., 1952; C.P.A., Maryland, 1949.

NEIL M. MCARTHUR, *Assistant Professor of Geography*

B.A., University of Western Ontario, 1948; M.A., 1950; PH.D., University of Michigan, 1955.

THEODORE H. MCNELLY, *Assistant Professor of Government and Politics*

B.S., University of Wisconsin, 1941; M.A., 1942; PH.D., Columbia University, 1952.

WALTER S. MEASDAY, *Assistant Professor of Economics*

A.B., College of William and Mary, 1945; PH.D., Massachusetts Institute of Technology, 1955.

MAURICE E. O'DONNELL, *Assistant Professor of Government and Politics*

B.S., Eastern Illinois State, 1948; M.S., University of Wisconsin, 1951; PH.D., 1954.

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B.A., University of Iowa, 1941; M.A., 1942; PH.D., 1948.

Instructors

ROBERT J. ALPERIN, *Instructor in Government and Politics*
B.A., University of Chicago, 1950; M.A., 1952; PH.D., Northwestern University, 1959.

CHARLES R. ANDERSON, *Instructor in Office Management and Techniques*
B.S., University of Maryland, 1957; M.ED., 1959.

JEREMY H. ANDERSON, *Instructor in Geography*
B.A., Yale University, 1956; M.A., University of Washington, 1959.

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A.B., Loyola College, 1942; M.A., University of Maryland, 1950.

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B.S., State Teachers College, Indiana, Pa., 1955; M.ED., Pennsylvania State University, 1958.

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B.S., American University, 1951; M.A., 1955.

ERNEST H. DAY, *Instructor in Economics*
A.B., Oberlin College; LL.B., George Washington University, 1950; M.A., 1955.

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B.A., George Washington University, 1953; M.B.A., Syracuse University, 1956.

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B.S., Kent State University, 1957; M.S., Ohio University, 1960.

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B.S., Bucknell University, 1958; M.B.A., University of Maryland, 1959.

Faculty

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B.S., University of Maryland, 1956; C.P.A., Maryland, 1956.

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A.B., Colgate University, 1954; M.P.A., Syracuse University, 1955.

DERK H. G. VAN BERGEN VAN DER GRIJP, *Lecturer in Geography (Cartography)*
GRAD., Royal Military Academy of the Netherlands, 1927; GRAD., Photogrammetry, Delft Technical University, 1935; GRAD., Topographic Training Centre, N.E.I., 1938; Col. Neth. Army (Ret.)

LAWRENCE J. HOGAN, *Lecturer in Public Relations*
B.A., Georgetown University, 1949; LL.B. 1954.

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B.S., University of Illinois, 1922; M.A., Harvard University, 1924; PH.D., 1929.

HAROLD LARSON, *Lecturer in Government and Politics*
B.A., Morningside College, 1927; M.A., Columbia University, 1928; PH.D., 1943.

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B.ED., Southern Illinois University, 1936; M.A., University of Nebraska, 1938; PH.D., 1941.

ROBERT LOVELACE, *Lecturer in Government and Politics, and Executive Secretary of the Maryland State Association of County Commissioners*
B.A., University of Connecticut, 1949; M.P.A., University of Kansas, 1951.

MILTON B. MILLON, *Associate and Lecturer, and Director of the Municipal Technical Advisory Service, Bureau of Governmental Research*
A.B., University of Maryland, 1950; M.A., University of Chicago, 1952.

HENRY W. MOORE, JR., *Lecturer in Economics*
B.S., University of Maryland, 1942; M.A., Yale University, 1952.

JOHN L. TIERNEY, *Lecturer in Business Law*
A.B., University of Minnesota, 1929; LL.B., University of Wisconsin, 1938; LL.M., George Washington University, 1956.

ROBERT F. TOWSON, *Lecturer in Industrial Management*
A.B., George Washington University, 1950; M.B.A., 1952; D.B.A., 1958.

S. M. VINOCOUR, *Lecturer in Public Relations*
A.B., University of Southern California, 1943; M.A., University of Nevada, 1948; PH.D., Pennsylvania State University, 1953.

JOSEPH W. WIEDEL, *Lecturer in Geography*
B.A., University of Maryland, 1958.

JEROLD N. WILLMORE, *Lecturer and Research Associate, Bureau of Governmental Research*

B.S., Idaho State College, 1956; M.A., American University, 1959.

Research Associates

JOHN FOOTE BRIGGS, *Research Associate, Bureau of Governmental Research*
B.A., Yankton College, 1950; M.S., University of Denver, 1952.

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B.A., Swarthmore College, 1953; M.A., University of the Philippines, 1956.

LUCIE G. KRASSA, *Research Associate, Bureau of Business and Economic Research*
doctor juris, University of Vienna, 1936.

EDMUND C. MESTER, *Research Associate, Bureau of Governmental Research*
A.B., University of Maryland, 1948; M.A., 1949.

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ROBERT Y. DURAND, M.B.A.....*Lecturer in Business Administration*

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EUGENE S. POWELL, M.A.....*Lecturer in Government and Politics*

JOHN A. WORTMEN, PH.D.....*Lecturer in Government and Politics*

COLLEGE
of
EDUCATION

Catalog Series 1961-1962



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VOLUME 16

APRIL 24, 1961

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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26 } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

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and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK	
<i>Chairman</i>	1966
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<i>Vice-Chairman</i>	1968
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B. HERBERT BROWN	
<i>Secretary</i>	1967
The Baltimore Institute, 10 West Chase Street, Baltimore	
HARRY H. NUTTLE	
<i>Treasurer</i>	1966
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LOUISE L. KAPLAN	
<i>Assistant Secretary</i>	1961
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<i>Assistant Treasurer</i>	1962
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THOMAS W. PANGBORN	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
WILLIAM C. WALSH	1968
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MRS. JOHN L. WHITEHURST	1967
4101 Greenway, Baltimore 18	

Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

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B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;
D.PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1949.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBACE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

Emeriti

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women, Emeritus*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

Administrative Officers of the Schools and Colleges

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland, 1917.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930; Diplome le l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; PH.D., (HON.), University of Louisville, 1946.

General Administrative Officers

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

B. JAMES BORRESON, *Executive Dean for Student Life*

B.A., University of Minnesota, 1944.

- DAVID L. BRIGHAM, *Director of Alumni Relations*
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
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B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; ED.D., Teachers College, Columbia University, 1960.
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- LESTER M. DYKE, *Director of Student Health Service*
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
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B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- HARRY D. FISHER, *Comptroller and Budget Officer*
B.S., University of Maryland, 1943.
- GEORGE W. FOGG, *Director of Personnel*
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*
B.S., University of Maryland, 1933.

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- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- CHARLES E. WHITE, *Chairman of the Lower Division*
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

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Dr. Vernon E. Krah1 (Medicine), *Chairman*

THE COLLEGE

THE COLLEGE OF EDUCATION MEETS THE NEEDS OF THE FOLLOWING CLASSES of students: (1) persons preparing to teach in secondary schools, elementary schools, kindergarten, and nursery schools; (2) present or prospective teachers who wish to supplement their preparation; (3) students preparing for educational work in the trades and industries; (4) graduate students preparing for teaching, supervisory, or administrative positions; (5) students whose major interests are in other fields, but who desire courses in education.

Special Facilities and Activities

RESEARCH AND TEACHING FACILITIES

Because of the location of the University in the suburbs of the nation's capital, unusual facilities for the study of education are available to its students and faculty. The Library of Congress, the library of the United States Office of Education, and special libraries of other government agencies are accessible, as well as the information services of the National Education Association, American Council on Education, United States Office of Education, and other institutions, public and private. The school systems of the District of Columbia, Baltimore, and the counties of Maryland offer generous cooperation.

THE INSTITUTE FOR CHILD STUDY

The Institute for Child Study carries on the following activities: (1) it undertakes basic research in human development; (2) it digests and synthesizes research findings from the many sciences that study human beings; (3) it plans, organizes, and provides consultant service programs of direct child study by in-service teachers in individual schools or in municipal, county or state systems; (4) it offers field training to a limited number of properly qualified doctoral students, preparing them to render expert consultant service to schools and for college teaching of human development. Inquiries should be addressed to Director, Institute for Child Study.

The College of Education operates a Workshop on Child Development and Education for six weeks each summer. Requiring full-time work of all participants it provides opportunities for (1) study and synthesis of scientific knowledge about children and youth; (2) training in the analysis of case records; (3) training for study-group leaders for in-service child study programs; (4) planning in-service programs of child study for teachers and pre-service courses and laboratory experiences for prospective teachers; (5) analysis of the curricular, guidance, and school organization implications of scientific knowledge about human development and behavior. Special announcements of the workshop are available each year and advanced registration is required because the number of participants must be limited.

Special Facilities, Undergraduate Programs

INDUSTRIAL EDUCATION DEPARTMENT

The Industrial Education Department is housed in a new building known as the J. Milton Patterson Building. The facilities of this building are devoted exclusively to the work of the Department. There are ten shops, a drafting room, library, conference room and two classrooms. All of the shops are adequately equipped with modern tools and machines.

THE UNIVERSITY OF MARYLAND NURSERY SCHOOL AND KINDERGARTEN

The University of Maryland operates a nursery school and kindergarten on the campus in which students majoring in Childhood Education receive training and practical experience.

PROFESSIONAL AND PRE-PROFESSIONAL ORGANIZATIONS

The College of Education sponsors two professional organizations: Phi Delta Kappa, the national professional fraternity for men in education, and Iota Lambda Sigma, the national honorary fraternity in industrial education. Both fraternities have large and active chapters and are providing outstanding professional leadership in their fields of service.

The College of Education also sponsors a chapter of the Student National Education Association. This chapter is open to undergraduate students on the College Park campus.

COURSES OUTSIDE OF COLLEGE PARK

Through the University College, a number of courses in education are offered in Baltimore, in other centers in Maryland, and overseas. These courses are chosen to meet the needs of groups of students in various centers. In these centers, on a part-time basis, a student may complete a part of the work required for an undergraduate or a graduate degree.

Announcements of such courses may be obtained by addressing requests to the Dean, University College, College Park, Maryland.

Undergraduate Programs

REQUIREMENTS FOR ADMISSION

All students desiring to enroll in the College of Education must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college rather than upon a fixed pattern

of subject matter. Of the sixteen required units, four (4) units of English and one unit each of social sciences, natural sciences, and mathematics are required. Additional units in mathematics, natural sciences, and social sciences are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. While a foreign language is desirable for certain programs, no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program that he might wish to enter. A special fee is charged for remedial work in mathematics.

Students are referred to the publication *An Adventure in Learning* for a complete statement of requirements for admission to the different curricula in the College of Education.

Candidates for admission whose high school or college records are consistently low are strongly advised not to seek admission to the College of Education.

GENERAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean
(College in which you are interested)
The University of Maryland
College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean
(School in which you are interested)
The University of Maryland
Lombard and Greene Streets
Baltimore 1, Maryland

Undergraduate Programs

AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of air science training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning air science, refer to *University General and Academic Regulations*, a publication mailed in September and February of each year to all new undergraduate students.

PHYSICAL EDUCATION AND HEALTH

All undergraduate students classified academically as freshmen and sophomores, irrespective of their physical condition, who are registered for more than six semester hours, are required to complete four prescribed courses in physical education. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have credit in these courses or their equivalent, must complete them or take them until graduation, whichever occurs first. Students with military service may receive credit for these required courses by applying to Room 140, Cole Activities Building.

GUIDANCE IN REGISTRATION

At the time of matriculation each student is tentatively assigned to a member of the faculty who acts as the student's personal adviser. The choice of subject areas within which the student will prepare to teach will be made under faculty guidance during the freshman year. The student will advise regularly with the faculty member in the College of Education responsible for his teaching major. While it may be possible to make satisfactory adjustments as late as the junior year for students from other colleges who have not already entered upon the sequence of professional courses, it is highly desirable that the student begin his professional work in the freshman year. *Students who intend to teach* (except Vocational Agriculture) *should register in the College of Education*, in order that they may have the continuous counsel and guidance of the faculty directly responsible for teacher education at the University of Maryland.

JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing

this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "0" credit shall not be included; in every course only the most recent grade shall be counted; courses in Basic Air Science, the physical education required of all University students, and the health courses required of all women students shall not be included. Courses in Advanced Air Science and courses in health or physical education which are taken as electives shall be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

The first two years of college work are preparatory to the professional work of the junior and senior years. To be eligible to enter the junior year professional courses, a student must have attained junior status. He must also have applied for admission to teacher education. This application must be approved by the Admission to Teacher Education Committee before the student may continue his program in teacher education. Transfer students in teacher education must also be approved if they are beyond the sophomore level.

CERTIFICATION OF TEACHERS

The State Department of Education certifies to teach in the approved public schools of the state only graduates of approved colleges who have satisfactorily fulfilled subject-matter and professional requirements. The several curricula of the College of Education fulfill State Department requirements for certification.

Students intending to qualify as teachers in Baltimore, Washington, or any other city or state should, in their junior year, obtain a statement of certification requirements from these areas and be guided thereby in the selection of courses. Advisers will assist in obtaining and utilizing such information.

The teacher education program is accredited by the National Council for Accreditation of Teacher Education.

DEGREES

The degrees conferred upon students who have met the conditions prescribed for a degree in the College of Education are Bachelor of Arts and Bachelor of Science. Majors in English, social sciences, language, and art receive the B.A. degree. Mathematics majors may receive either degree. All others receive the B. S. degree.

COSTS

Actual annual costs of attending the University include \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu

Graduate Studies

of the matriculation fee. A charge of \$300.00 is assessed to all students who are non-residents of the state of Maryland.

For a more detailed statement of these costs, write to the Editor of Publications for the publication *An Adventure in Learning*.

Graduate Studies

GRADUATE STATUS

For graduate study in education a student must have earned at least 16 semester credits in education at the undergraduate level, and hold a bachelor's or master's degree from a college or university of recognized standing. This requirement may be interpreted so that foundation work in fields other than education may be accepted in cases of graduate students not preparing for school work. The student must also satisfy the Graduate School as to his ability to do graduate work.

All new graduate students in education are required, during the first semester of graduate work, to take a test battery. A testing fee of \$5.00 will be charged on first registration.

REGISTRATION

A graduate student in education must matriculate in the Graduate School. Application for admission to the Graduate School should be made prior to dates of registration on blanks obtained from the office of the Dean of the Graduate School. For further instructions a student should consult the Graduate School Announcements.

MASTERS' DEGREES

A graduate student in education may matriculate for a Master of Education or a Master of Arts degree. For requirements of these degrees, the student should consult both the Graduate School Announcements and the duplicated material issued by the College of Education. On matriculation, the student should select a faculty adviser.

ADVANCED GRADUATE SPECIALIST IN EDUCATION

A student who wishes to enter this program, which requires a total of 60 hours graduate work, must have completed a master's degree. The student is admitted on a special non-degree basis. For requirements of this program, the student should consult the Graduate School Announcements and duplicated material issued by the College of Education.

DOCTORS' DEGREES

Programs leading to a Doctor of Philosophy in education or a Doctor of Education degree are administered for the Graduate School by the Department of Education. For requirements of these degrees, the student should consult both the Graduate School Announcements and the statement of policy relative to doctoral programs in education. If the student has not already made arrangements with a member of the faculty to advise him, he should consult with the chairman of the Education Committee on Doctoral Programs regarding a proper adviser.

CURRICULA AND REQUIRED COURSES

The undergraduate curricula in the College of Education with advisers for each curriculum are as follows:

Academic Education

English—Marie D. Bryan
Foreign Languages—Henry Mendeloff
Mathematics—John R. Mayor, Helen Garstens
Natural Sciences—Orval L. Ulry
Social Studies—Robert G. Risinger, Jean Grambs
Speech—Warren Strausbaugh (minor only)

Agricultural and Extension Education (under the College of Agriculture)
V. R. Cardozier

Art Education

Edward L. Longley, Jr.

Business Education

Arthur S. Patrick

Childhood Education

James L. Hymes, Jr.
Margaret A. Stant

Elementary Education

Alvin W. Schindler
Marie Denecke
Glenn O. Blough
Alphoretta Fish
William J. Massey
Leo W. O'Neill
Terry E. Schwarz

Home Economics Education

Mabel S. Spencer

Industrial Education

Donald Maley
Edmund D. Crosby
Paul E. Harrison
Irving Herrick
Eckhart Jacobsen
George R. Merrill
Carl S. Schramm
William F. Tierney

Music Education

Herbert H. Henke

General Requirements

Physical Education (men)

Albert W. Woods

Physical Education (women)

Dorothy R. Mohr

Special Education

Jean R. Hebelor (minor only)

GENERAL REQUIREMENTS OF THE COLLEGE

A total of 120 semester hours in addition to the University requirement in military science and physical education is required for graduation in the College of Education. In no case shall the total number of semester hours required for graduation be less than 128.

The following are minimum requirements for graduation: English—12 semester hours; social studies—12 semester hours as follows: G. & P. 1—American Government; H. 5, 6—History of American Civilization; and one of the following courses: Soc. 1—Sociology of American Life, Phil. 1—Philosophy for Modern Man, Psych. 1—Introduction to Psychology, Econ. 31—Principles of Economics, or Econ. 37—Fundamentals of Economics; science or mathematics—6 semester hours; education—20 semester hours; speech—3 semester hours; physical education and military science as required by the University. (Students who qualify in classification tests in English, American history, or American government will be exempted from a three-hour requirement in the area concerned and will select a replacement from a set of courses designated. See the publication *An Adventure in Learning*.)

Marks in all required upper division courses in education and in subjects in major and minor fields must be "C" or higher. A general average of "C" or higher must be maintained. In order to be admitted to a course in student teaching, *a student must have a grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. Application must be made with the appropriate adviser by the middle of the semester which precedes the one in which student teaching will be done. Any applicant for student teaching must have been enrolled previously at the University of Maryland for at least one semester.*

Exceptions to curricular requirements and rules of the College of Education must be recommended by the student's adviser and approved by the Dean.

Students who are not enrolled in the College of Education but who are preparing to teach must meet all curricular and scholastic requirements of the College of Education.

MAJORS AND MINORS

Students select a teaching major: for example, social science, art, music, physical education. Those electing the academic curriculum will ordinarily se-

lect both a teaching major and a teaching minor (except in social studies where no minor is required), and students in other curricula may select minors if they so desire. Advisers may waive the requirement for a minor when necessary to permit the development of an approved area such as psychology, human development, or sociology.

Students selecting an academic major and an academic minor, or those selecting *one* special teaching field such as industrial education need to take only one methods course: for example, Ed. 140 or Ind. Ed. 140. Students who select an academic major and a special fields minor or vice versa, must take methods courses in both the major and minor fields, and should divide their student teaching between the two fields.

ACADEMIC EDUCATION

Students enrolled in this curriculum will meet the above minimum requirements in English and social sciences, plus the following:

- (1) Foreign language for candidates for the Bachelor of Arts degree: 12 semester hours provided the student enters with less than three years of foreign language credits; 6 semester hours, if he enters with three years of such credits. No foreign language is required of any student who enters with four years of language credits nor of candidates for the Bachelor of Science degree unless specified in the curriculum.
- (2) Science or mathematics, 12 semester hours.
- (3) Education, 22-25 semester hours.
- (4) Speech, 3 semester hours.

All students who elect the academic education curriculum will fulfill the preceding *general* requirements and also prepare to teach one or more school subjects which will involve meeting *specific* requirements in *particular* subject matter fields.

The specific requirements by subject fields are as follows:

English. A major in English requires 36 semester hours as follows:

Composition and Literature	12 semester hours
American Literature, Advanced	3 semester hours
Electives	21 semester hours

A minor in English requires 26 semester hours. It includes the 15 semester hours prescribed for the major and 11 hours of electives.

Electives must be chosen with the approval of the adviser.

Social Sciences. For a major in this group 51 semester hours are required, of which at least 24 hours must be in history, including H. 5, 6 and 12 hours of 100-level history courses including H. 199; 27 hours of related social sciences as outlined below:

At least one course in each of the following areas: geography, sociology, government and politics, and psychology. Eighteen semester hours in any two of the following areas: economics, geography, sociology, government and politics, or psychology. One-half of these courses must be on the 100 level.

Foreign Languages. A major of 36 semester hours is offered in foreign languages. All students preparing to teach French, German, or Spanish are required to take Comparative Literature 101 and 102 and are strongly advised to take the review course for majors. Further courses in comparative literature along with work in European or Latin American history are also recommended.

Specific minimum requirements in the three languages are a semester each of intermediate and advanced conversation (French, German, or Spanish 8 and 80), a semester of grammar review, six hours of introductory survey of the literature (French, German, Spanish 75 and 76), one semester of a life and culture course (French, German, Spanish 161 or 162) and six hours in literature courses numbered 100 or above. Other courses will be chosen subject to the approval of the student's adviser. If a foreign language is offered as a second field, all major requirements must be met.

Classical Language—Latin. A minor for teaching Latin requires 24 prescribed semester hours of Latin based upon two years of high school Latin or 18 prescribed semester hours of Latin plus 6 elective hours based upon four years of high school Latin. Those students with two years of high school Latin should take Latin 3, 4, 5, 51, 52, 61, 101, and 102. Those with four years of high school Latin begin with Latin 5; otherwise, the same as above with 6 hours selected from Latin 103, 104, or 105.

It is recommended that electives also be taken from Latin 70, History 153, Comparative Literature 101, English 101, and Art 9.

Mathematics. A major in mathematics requires 30 semester hours and a minor, 20 semester hours. The following courses must be included in both major and minor: Math. 18, 19—Elementary Mathematical Analysis (5, 5), and Math. 20, 21—Calculus (4, 4).

Electives in mathematics are selected with the advice of the adviser.

Science. In general science a major of 40 semester hours and a minor of 30 semester hours are offered, each including the following courses: Chem. 1, 3—General Chemistry (4, 4), Zool. 1—General Zoology (4), Bot. 1—General Botany (4), Phys. 10, 11—Fundamentals of Physics (4, 4) or Phys. 1, 2—Elements of Physics (3, 3).

Other courses will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies.

Minors of 28 semester hours are offered in chemistry, in physics, and in biological sciences. A minor in biology must be supported by a one-year course in chemistry. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics.

The requirements for major and minor are met if 52 semester hours in natural science, including the above listed courses, are offered.

Speech. A minor of 22 semester hours is offered in speech. The minimum requirements for this minor are 16 semester hours in addition to the 6 semester hours of departmental requirements in Speech 1 and 3. The 16 semester hours above the departmental requirement must include 6 hours of courses numbered 100 or higher. It is the policy of the department to build a program of

Academic Education Curriculum

study in anticipation of the needs of prospective teachers, supervisors, correctionists, dramatic coaches, and other specialists in the general field of speech. All programs for the minor must be approved by the departmental adviser.

ACADEMIC EDUCATION CURRICULUM

<i>Freshman Year</i>	Semester	
	I	II
Ed. 1—Freshman Orientation ¹	0	0
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life, Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ²	3	..
Speech 1—Public Speaking.....	..	3
G. & P. 1—American Government ¹ .....	..	3
A. S. 1, 2—Basic Air Science (men).....	½*	2
P. E. 1, 3—(men); P. E. 2, 4 (women).....	1	1
Hea. 2—Personal Health (women)	2	..
Hea. 4—Community Health (women) .....	..	2
Science, mathematics, foreign language or major and minor requirements	4-6	6
Total.....	13½-15½	17-18
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education ¹	2	..
Eng. 3, 4—Composition and World Literature, or	3	3
Eng. 5, 6—Composition and English Literature	3	3
H. 5, 6—History of American Civilization	3	3
A. S. 3, 4—Basic Air Science (men).....	2	½
P. E. 5, 7 (men); P. E. 6, 8 (women)	1	1
Science, mathematics, foreign language or major and minor requirements	6	8
Total	17	15½
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development	3	3
Major and minor requirements, electives	15	15
Total	18	18

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹May be taken either semester.

²Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

Agricultural Education, Art Education Curriculum

	Semester	
	I	II
<i>Senior Year</i>		
Ed. 140—Curriculum, Instruction and Observation ¹	3	..
Ed. 145—Principles and Methods of Secondary Education ¹	3	..
Ed. 148—Student Teaching in Secondary Schools ¹	8	..
Electives ²	2-3	..
Major and minor requirements, electives ¹.....	..	16
Total	16-17	16

AGRICULTURAL EDUCATION

This curriculum is designed to prepare students for teaching vocational agriculture in high schools. To obtain full particulars on course requirements, the student should consult the catalog of the College of Agriculture.

ART EDUCATION

This curriculum is planned to meet the growing demand for teachers and supervisors of art activity. Emphasis is placed upon ways to draw out and develop the creative inclinations of beginners; to integrate art and other areas of study; to utilize art in solving social problems.

ART EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation ¹	0	0
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern man or Psych. 1—Introduction to Psychology ²....	..	3
G. & P. 1—American Government.....	3	..
Speech 1—Public Speaking	3	..
Pr. Art 1—Design.....	..	3
Pr. Art 2—Survey of Art History.....	2	..
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
A. S. 1, 2—Basic Air Science (men).....	½*	2
P. E. 1, 3 (men), P. E. 2, 4 (women).....	1	1
Language or electives ⁴	4	2-4
Total.....	18½	16-18

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹May be taken either semester, except Ed. 140 and 148 in certain major areas.

²English and social studies majors must elect Ed. 134.

³Or Econ. 31, Principles of Economics (3 credits) or Econ. 37, Fundamentals of Economics (3 credits) in the sophomore year.

⁴Required foreign language: 12 semester hours provided the student enters with less than three years of foreign language credit; 6 semester hours, if he enters with three years of such credit. No foreign language is required of any student who enters with four years of language credit.

Art Education Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education.....	2	..
Eng. 3, 4—Composition and World Literature.....	3	3
Science or Mathematics.....	3	3
Pr. Art 3—Silk Screen Printing.....	2	..
Pr. Art 4—Three-dimensional Design.....	..	2
Pr. Art 20—Costume Design.....	3	..
Pr. Art 30—Typography and Lettering.....	..	3
Cr. 30—Metalry	2	..
Cr. 40—Weaving .....	..	2
Cr. 2—Simple Crafts .....	..	2
Art 13—Elementary Sculpture or Cr. 20. Ceramics.....	2	..
A. S. 3, 4—Basic Air Science (men).....	2	½
P. E. 5, 7 (men), P. E. 6, 8 (women).....	1	1
	<hr/>	<hr/>
Totals: Women.....	17	16
Men	20	16½
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
H. 5, 6—American History.....	3	3
Pr. Art 0—Professional Lectures .....	..	0
Pr. Art 21—Action Drawing of Art 104, Life Class.....	..	2-3
Cr. 5—Puppetry .....	..	3
Art 6—Still Life.....	3	..
Art 20—Art Appreciation	2	..
Pr. Art 136—Display .....	..	2
Speech 14—Stagecraft	2	..
Language or electives ¹	4-6	2-4
	<hr/>	<hr/>
Total.....	15-18	17-19
<i>Senior Year</i>		
Ed. 140—Curriculum, Instruction and Observation in Art.....	3	..
Pr. Art 132—Advertising Layout.....	2	..
Art 7—Landscape Painting.....	3	..
Ed. 134—Materials and Procedures for the Secondary Core Curriculum .....	..	3
Ed. 145—Principles and Methods of Secondary Education.....	..	3
Ed. 148—Student Teaching in the Secondary Schools ².....	..	8
Pr. Art 100—Mural Design.....	2	..
Language or electives ¹	6-8	..
	<hr/>	<hr/>
Total.....	16-18	14

¹Required foreign language: 12 semester hours provided the student enters with less than three years of foreign language credit; 6 semester hours, if he enters with three years of such credit. No foreign language is required of any student who enters with four years of language credit.

²Available only during 8 weeks of the spring semester.

A minimum of 24 semester hours constitutes a minor in art education. Required: Pr. Art 1, Pr. Art 2, Cr. 2, Art 7, Ed. 140. Electives are to be chosen from courses which carry the symbols Pr. Art, Cr., Art. Electives are to be chosen in consultation with the adviser to art education students. Scheduling of laboratory courses necessitates an early start on an art program. The art minor does not qualify students for Ed. 148, Student Teaching in the Secondary Schools.

BUSINESS EDUCATION

Two curricula are offered for the preparation of teachers of business subjects. The general business education curriculum qualifies for teaching all business subjects except shorthand. Providing thorough training in general business, including economics, this curriculum leads to teaching positions on both junior and senior high school levels. By the proper selection of electives, persons following this curriculum may also qualify as teachers of social studies.

The secretarial education curriculum is adapted to the needs of those who wish to become teachers of shorthand as well as other business subjects.

GENERAL BUSINESS EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation	0	0
Eng. 1, 2—Composition and American Literature	3	3
G. & P. 1—American Government.....	3	..
Speech 1—Public Speaking.....	..	3
O. T. 1, 2—Principles and Intermediate Typewriting	2	2
B. A. 10, Introduction to Business.....	3	..
Geog. 1—Economic Resources .....	..	2
Math. 5, 6—Business Algebra and Mathematics of Finance	3	3
Elective	2	..
A. S. 1, 2—Basic Air Science (men).....	1½*	2
Hea. 2, 4—Personal and Community Health (women)	2	2
P. E. 1, 3—Orientation to Physical Education, and Develop- mental and Combative Sports (men)	1	1
P. E. 2, 4—Basic Skills of Sports and Rhythms (women)	1	1
Total.....	17½-19	16
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
O. T. 10—Office Typewriting Problems	2	..
Ed. 2—Introduction to Education .....	..	2
H. 5, 6—History of American Civilization.....	3	3
B. A. 20, 21—Principles of Accounting.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
A. S. 3, 4—Basic Air Science (men).....	2	½
P. E. 5, 7—Aquatic and Team Sports, and Recreational Sports (men)	1	1
P. E. 6, 8—Selected Sports and Dance (women)	1	1
Total.....	15-17	15-15½

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

Business Education Curriculum

	(Semester)	
	I	II
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development . . .	3	3
B. A. 100—Office Operations and Management	3	..
B. A. 166—Business Communications . . . . .	..	3
B. A. 14—Survey of Office Machines	2	..
B. A. 112—Records Management . . . . .	..	2
B. A. 101—Integrated Data Processing for Internal Control ..	..	3
Econ. 140—Money and Banking	3	..
Soc. 1—Sociology of American Life (or Phil. 1 or Psych. 1) ..	3	..
B. A. 159—Marketing Principles and Organization	3	..
B. A. 180—Business Law . . . . .	..	3
Total	17	14
<i>Senior Year</i>		
B. A. 181—Business Law	3	..
B. A. 102—Electronic Data Processing Systems	3	..
Ed. 140—Curriculum, Instruction, and Observation—Business Subjects	3	..
Ed. 145—Principles and Methods of Secondary Education . . .	..	3
B. Ed. 100—Techniques of Teaching Office Skills . . . . .	..	3
Ed. 148—Student Teaching in Secondary Schools . . . . .	..	8
Electives ¹	6	..
Total	15	14

SECRETARIAL EDUCATION CURRICULUM

<i>Freshman Year</i>		
Ed. 1—Freshman Orientation	0	0
Eng. 1, 2—Composition and American Literature	3	3
G. & P. 1—American Government	3	..
Soc. 1—Sociology of American Life (or Phil. 1, or Psych. 1.) ..	..	3
O. T. 1, 2—Principles and Intermediate Typewriting	2	2
O. T. 12, 13—Principles of Shorthand I, II	3	3
A. S. 1, 2—Basic Air Science (men)	½*	2
Hea. 2, 4—Personal and Community Health (women)	2	2
P. E. 1, 3—Orientation to Physical Education and Developmental and Combative Sports (men)	1	1
P. E. 2, 4—Basic Skills of Sports and Rhythms (women)	1	1
Total	15½-17	20

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹A minimum of 55 semester hours of courses in economics, business administration, and office techniques are required.

Business Education Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education .....	..	2
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
O. T. 10—Office Typewriting Problems	2	..
O. T. 16, 18—Advanced Gregg Shorthand	2	2
O. T. 17, 19—Problems in Gregg Transcription	2	2
B. A. 14—Survey of Office Machines	2	..
Speech 1—Public Speaking .....	..	3
A. S. 3, 4—Basic Air Science (men)	2	½
P. E. 5, 7—Aquatic and Team Sports, and Recreational Sports (men)	1	1
P. E. 6, 8—Selected Sports and Dance (women)	1	1
Total	15-17	17½
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development	3	3
B. A. 20, 21—Principles of Accounting	3	3
Econ. 37—Fundamentals of Economics	3	..
B. A. 100—Office Operations and Management	3	..
O. T. 110—Administrative Secretarial Procedures .....	..	3
B. A. 166—Business Communications .....	..	3
Econ. 140—Money and Banking	3	..
B. A. 180—Business Law .....	..	3
Total	15	15
<i>Senior Year</i>		
O. T. 114—Secretarial Office Practice	3	..
B. A. 101—Integrated Data Processing for Internal Control	3	..
B. A. 112—Records Management	2	..
B. Ed. 100—Techniques of Teaching Office Skills .....	..	3
Ed. 140—Curriculum, Instruction and Observation— Business Subjects	3	..
Ed. 145—Principles and Methods of Secondary Education ....	..	3
Ed. 148—Student Teaching in Secondary Schools .....	..	8
Electives ¹	6	..
Total	17	14

¹A minimum of 55 semester hours of courses in economics, business administration, and office techniques are required.

EARLY CHILDHOOD EDUCATION

The early childhood education curriculum has as its primary goal the preparation of nursery school, kindergarten, and primary teachers. It is also planned to further the personal development of the student and to provide general education in one facet of homemaking.

Observation and student teaching are done in the University Nursery School and Kindergarten on the campus and in approved schools in nearby communities. Each student must select a minor in an approved field.

Graduates receive a B.S. degree and meet the requirements for certification for teaching kindergarten and nursery school and primary grades in Maryland. Each student should have one summer of experience in working with children.

EARLY CHILDHOOD EDUCATION CURRICULUM (Nursery-Kindergarten-Primary)

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ¹ ...	3	..
G. & P. 1—American Government.....	..	3
Bot. 1—General Botany	4	..
Zool. 1—General Zoology .....	..	4
Speech 3—Fundamentals of General American Speech.....	3	..
Art 15—Fundamentals of Art.....	..	3
Ed. 2—Introduction to Education.....	2	..
Hea. 2, 4—Personal and Community Health (Women).....	2	2
P. E. 2, 4—Physical Education (Women).....	1	1
P. E. 1, 3—Physical Education (Men).....	1	1
A. S. 1, 2—Basic Air Science (Men).....	1½*	2
Approved electives (Optional).....	..	..
Total.....	16½-18	16
<i>Sophomore Year</i>	I	II
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....		
H. 5, 6—History of American Civilization.....	3	3
Math. 0—Basic Mathematics (if required).....	0	..
Math. 3—Fundamentals of Mathematics .....	..	4

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

Childhood Education Curriculum

	Semester	
	I	II
<i>Sophomore Year (continued)</i>		
Mus. 16—Music Fundamentals	3	..
C. Ed. 50, 51—Child Development I, II.....	3	3 ²
Chem. 1—General Chemistry or.....	4	..
Geog. 30 (3), or Geog. 40 (3), or Physics I (3), or.....		
Geology I (3)		
Chem. 3— General Chemistry or Foods I (3) or Nut. -0 (3)..	4	4
P. E. 6, 8—Physical Education (Women).....	1	1
P. E. 5, 7—Physical Education (Men).....	1	1
A. S. 3, 4—Basic Air Science (Men).....	2	½
Hea. 40—Personal and Community Health (Men).....	..	3
Total.....	17-19	18-18½
<i>Junior Year</i>		
C. Ed. 115—Children's Activities and Activities Materials....	3	..
C. Ed. 116—Creative Music for Young Children.....	3	..
Ed. 153—Teaching of Reading ³.....	..	2
Ed. 122—Social Studies in the Elementary School ³.....	..	2
Ed. 124—Arithmetic in the Elementary School ³.....	..	2
Sci. Ed.—105—Science in the Elementary School ³.....	..	2
Ed. 123—The Child and the Curriculum ³.....	..	3
H. 1—History of Modern Europe or H. 51—The Humanities or		
Phil. 1—Philosophy for Modern Man, or Soc. 2—Principles or		
Sociology	3	..
H. 2—History of Modern Europe or H. 52—The Humanities or		
Phil. 53—Philosophy of Religion or Soc. 14—Urban Sociology..	..	3
Geog. 10—General Geography	3	..
Approved electives	3	3
Total	15	17
<i>Senior Year</i>		
C. Ed. 149—Teaching Nursery School	4	..
C. Ed. 159—Teaching Kindergarten	4	..
Ed. 149—Student Teaching in Elementary School ⁴.....	..	8
Soc. 5—Anthropology or Soc. 105—Cultural Anthropology or		
Psych. 5—Mental Hygiene or Psych. 21—Social Psychology....	3	..
Approved Electives	4	7
Total.....	15	15

ELEMENTARY EDUCATION

There are two undergraduate curriculums in elementary education. The first one is for regular undergraduate students who desire to earn the Bachelor of Science degree and to qualify for an elementary school teaching certificate. The second curriculum is for teachers in service.

² Men would need to take this in Junior year

³ These would be special sections for Early Childhood Education

⁴ To be done in the primary grades

ELEMENTARY EDUCATION CURRICULUM

FOR REGULAR UNDERGRADUATE STUDENTS

This curriculum is designed for regular undergraduate students who wish to qualify for teaching positions in elementary schools. Students who complete the curriculum will receive the Bachelor of Science degree, and they will meet the Maryland State Department of Education requirements for the Bachelor of Science Certificate in Elementary Education. The curriculum also meets certification requirements in many other states, Baltimore, and District of Columbia.

Some of the academic courses need not be taken in the indicated sequence. For example, Bot. 1 may be taken during the second semester of the freshman year instead of the first semester, or it may be taken during the sophomore or junior year. However, the courses in human development education and certain other education courses must be taken during the junior year, and Ed. 149—Student Teaching in Elementary Schools—should be taken during the first semester of the senior year.

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ²	3	..
G. & P. 1—American Government ¹ .....	..	3
Bot. 1—General Botany	4	..
Zool. 1—General Zoology .....	..	4
Art 15—Fundamentals of Art	3	..
Music 16—Music Fundamentals for the Classroom Teacher ³ ..	..	3
Ed. 1—Freshman Orientation ¹	0	..
P. E. 1, 3 (men); P. E. 2, 4 (women)	1	1
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women) .....	..	2
A. S. 1, 2—Basic Air Science (men).....	½*	2
Approved Electives (optional)		
Total.....	14½-16	16

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹May be taken either semester.

²Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

³Students planning an area of specialization in elementary school music education should substitute Music 7 for Music 16.

Elementary Education Curriculum

Sophomore Year

—Semester—

Eng. 3, 4—Composition and World Literature or Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization	3	3
Speech 3—Fundamentals of General American Speech.....	3	..
Ed. 2—Introduction to Education ¹	2	..
Chem. 1—General Chemistry	4	..
or Geog. 30—Principles of Morphology (3)		
or Geog. 40—Principles of Meteorology (3)		
or Phys. 1—Elements of Physics (3)		
Chem. 3—General Chemistry .....	..	4
or Foods 1—Introductory Foods (3)		
or Nut. 10—Elements of Nutrition (3)		
or one of the other physical science courses listed above.		
Note: Only one geography and only one foods course may be taken.		
Math. 0—Basic Mathematics (if required).....	0	..
Math. 3—Fundamentals of Mathematics .....	..	4
or Math. 5—Business Algebra (3)		
P. E. 5, 7 (men); P. E. 6, 8 (women)	1	1
Hea. 40—Personal and Community Health (men) .....	..	3
A. S. 3, 4—Basic Air Science (men).....	2	½
Approved Electives (women) ²	2	3
Total.....	18	18-18½

Junior Year

H. D. Ed. 100, 101—Principles of Human Development	3	3
H. 1, 2—History of Modern Europe	3	3
Geog. 10—General Geography	3	3
Ed. 52—Children's Literature	2	..
Ed. 153—Teaching of Reading* .....	..	2
Ed. 121—The Language Arts in the Elementary School*.....	..	2
Ed. 122—Social Studies in the Elementary School*.....	..	2
Ed. 124—Arithmetic in the Elementary School*.....	..	2
Sci. Ed. 105—Science in the Elementary Schools.....	..	2
Approved Electives ²	6	..
Total	17	19

*Open only to students in elementary curriculum. Students who register for one of these courses must register for all five courses.

¹May be taken either semester.

²Number of elective hours and choice of courses must be approved by adviser. Several electives must be taken at the 100 level during junior and senior years.

	—Semester—	
<i>Senior Year</i>		
Ed. 149—Student Teaching in Elementary Schools	16	..
Geog. 100—Regional Geography of Eastern Anglo-America ..	}	3
or Geog. 101—Regional Geog. of Western Anglo-America ..		
or Geog. 120—Economic Geography of Europe		
P. E. 120—Physical Education in the Elementary School ....	..	3
Mus. Ed. 128—Music for the Elementary Classroom Teacher ..	..	2
Ed. 125—Art in Elementary Schools .....	..	2
Approved Electives ² .....	..	10
	<hr/>	<hr/>
Total	16	20

AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL PHYSICAL EDUCATION AND HEALTH EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school physical education and health education. Students interested in this area should consult with the Dean of the College of Physical Education, Recreation and Health.

AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL MUSIC EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school music education, and thereby qualify for the Bachelor of Science Certificate in Special Subjects. In order to fulfill requirements in this area, the following courses should be taken in addition to those required in the Elementary School Curriculum:

Music 1 (3); Music 8 (3); Music 160 or 161 (2); Music 70, 71 (4, 4); Music 80, 81 (2, 2); Applied Music; Piano (8), Voice (4); and Mus. Ed. 139 (2) in place of Mus. Ed. 128 (2) in the senior year.

ELEMENTARY EDUCATION CURRICULUM FOR UNDERGRADUATE TEACHERS

This curriculum is for teachers who have completed a two-or three-year curriculum in a teachers college. It is also for teachers who have two or more years of successful teaching experience which can be used in lieu of student teaching to meet certification requirements.

²Number of elective hours and choice of courses must be approved by adviser. Several electives must be taken at the 100 level during junior and senior years.

Elementary Education Curriculum

This curriculum, leading to the Bachelor of Science degree in elementary education, requires a total of 128 semester credits. The last 30 credits earned before the conferring of the degree must be taken with the University of Maryland.

State Department of Education requirements provide that a teacher in service may not earn more than six credits for certification purposes during a school year. The College of Education assumes no responsibility in this connection, but candidates are advised to observe the regulation.

Specific requirements for the degree are as follows: (In meeting requirements, particular attention must be given to the footnotes.)

Requirements for individuals with approximately 64 transfer credits:

Education	4
English (not including freshman and sophomore English) ¹	10
Natural Science (chemistry, physics, botany, zoology, microbiology, entomology, general science, meteorology) ²	10
Social Science (history, government, sociology, economics, geography) ³	12
Electives (as many as needed to give a total of at least 128 credits)	
Requirements for individuals with approximately 96 transfer credits:	
Education	2
English (not including freshman and sophomore English) ¹	6
Natural Science (as above) ²	6
Social Science (as above) ³	12
Electives (as many as needed to give a total of at least 128 credits)	

¹If less than 12 credits were earned in English during the first two years of college, the deficiency must be made up in addition to the credits specified above.

²No more than four semester hours of science education and other approved substitutions for regular science courses will be counted toward the natural science requirements.

³If the transfer credits did not include at least 3 credits in American government, 3 credits in sociology, philosophy, or economics, and 6 credits in American history, those deficiencies must be made up in addition to the 12 social science credits specified above.

HOME ECONOMICS EDUCATION

The home economics education curriculum is designed for students who are preparing to teach vocational or general home economics or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

The offering includes both undergraduate and graduate programs leading to the degrees of Bachelor of Science, Master of Education, and Master of Science.

HOME ECONOMICS EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation ¹	0	0
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology	3	..
Chem. 11, 13 or Chem. 1, 3	3-4	3-4
H. E. 1—Home Economics Orientation	0	..
Tex. 1—Textiles .....	..	3
Pr. Art 1—Design	3	..
Hea. 2—Personal Health (women)	2	..
Hea. 4—Community Health (women) .....	..	2
P. E. 2, 4	1	1
G. & P. 1—American Government .....	..	3
Speech 1—Public Speaking .....	..	3
Electives	1-2	..
Total	16-18	18-19
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education ¹	2	..
Eng. 3, 4—Composition and World Literature, or	3	3
Eng. 5, 6—Composition and English Literature	3	3
H. 5, 6—History of American Civilization .....	..	3
Pr. Art 20—Costume Design	3	..
Foods 2, 3—Foods ²	3	3
Bot. 1—General Botany .....	..	4
P. E. 6, 8	1	1
Electives ³	1-2	..
Total	16-17	17

¹May be taken either semester.

²Foods 52, 53 carries a prerequisite of Chem. 31, 32, 33, 34.

³Chem. 31, 32, 33, 34, Organic Chemistry, recommended as an elective or in lieu of General Botany for individuals with special interest in and need for Food and Nutrition.

Industrial Education Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
H. E. Ed. 140—Curriculum, Instruction, and Observation . . .	3	..
H. D. Ed. 100, 101—Principles of Human Development . . .	3	3
Home Mgt. 150, 151—Home Management	3	3
Foods 101—Meal Management	2	..
Clo. 22—Clothing Construction . . . . .	..	2
Nut. 10 or 110—Elements of Nutrition . . . . .	..	3
Econ. 37—Fundamentals of Economics . . . . .	..	3
Zool. 1—General Zoology	4	..
Electives	2	3
Total	17	17
<i>Senior Year*</i>		
H. E. Ed. 102—Problems in Teaching Home Economics	3	..
Ed. 145—Principles and Methods of Secondary Education . . .	3	..
H. E. Ed. 148—Teaching Secondary Vocational Home Economics	8	..
Home Mgt. 152—Practice in Management of the Home	3	..
Pr. Art 2—Survey of Art History or Clo. 128—Home Furnishings . . . . .	..	2-3
Microb. 1 or 51—Microbiology . . . . .	..	3-4
Electives . . . . .	..	6
Total	17	11-13

INDUSTRIAL EDUCATION

Three curriculums are administered by the Industrial Education Department: (1) Industrial Arts Education. (2) Vocational-Industrial Education, and (3) Education for Industry. The overall offering includes both undergraduate and graduate programs leading to the degrees of: Bachelor of Science, Master of Education, Master of Arts, Doctor of Education, and Doctor of Philosophy.

The industrial arts education curriculum prepares persons to teach industrial arts at the secondary school level. It is a four-year program leading to a Bachelor of Science degree. While trade or industrial experience contributes significantly to the background of the industrial arts teacher, previous work experience is not a condition of entrance into this curriculum. Students who are enrolled in the curriculum are encouraged to obtain work in industry during the summer months. Industrial arts as a secondary school subject area is a part of the general education program characterized by extensive shopwork and laboratory experiences.

The vocational-industrial curriculum may lead either to certification as a vocational-industrial teacher with no degree involved or to a Bachelor of Science

*Subjects in the senior year will be so arranged that the two semesters may be interchanged.

degree, including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses and hence the courses which are offered are those required for certification in Maryland. The vocational-industrial curriculum requires trade competence as specified by the *Maryland State Plan for Vocational Education*. A person who aspires to take the certification courses should review the state plan and may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county he may discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

INDUSTRIAL ARTS EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation ¹	0	0
Eng. 1, 2—Composition and American Literature	3	3
Speech 1—Public Speaking.....	..	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology	3	..
G. & P. 1—American Government ¹ .....	..	3
Ind. Ed. 1—Mechanical Drawing	2	..
Ind. Ed. 34—Graphic Arts I .....	..	3
Ind. Ed. 2—Elementary Woodworking	2	..
Ind. Ed. 22—Machine Woodworking I .....	..	2
Ind. Ed. 12—Shop Calculations ¹	3	..
A. S. 1, 2—Basic Air Science (men).....	½	2
P. E. 1, 3—Physical Activities	1	1
Total.....	14½	17
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education ¹	2	..
Eng. 3, 4—Composition and World Literature, or	3	3
Eng. 5, 6—Composition and English Literature	3	3
H. 5, 6—History of American Civilization	2	..
Ind. Ed. 21—Mechanical Drawing .....	..	2
Ind. Ed. 28—Electricity I	3	..
Ind. Ed. 26—General Metal Work	4	4
Chem. 1, 3—General Chemistry .....	..	3
Math. 10—Algebra	2	½
A. S. 3, 4—Basic Air Science (men).....	1	1
P. E. 5, 7—Physical Activities		
Total.....	20	16½

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹May be taken either semester.

Industrial Education Curriculum

	(Semester)	
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development . . .	3	3
Phys. 1, 2—Elements of Physics	3	3
Ind. Ed. 41—Architectural Drawing	2	..
Ind. Ed. 48—Electricity II . . . . .	..	2
Ind. Ed. 33—Automotives I	3	..
Ind. Ed. 160—Essentials of Design . . . . .	..	2
Ind. Ed. 164—Shop Organization and Management . . . . .	..	2
Ind. Ed. 166—Educational Foundations of Industrial Arts . . .	2	..
Ed. 161—Principles of Guidance . . . . .	..	3
Electives—(shopwork and/or drafting) ¹	2	2
Electives (unspecified)	2	2
Total	17	19
<i>Senior Year</i>		
Ind Ed. 140—Curriculum, Instruction and Observation, Industrial Education	3	..
Ind. Ed. 148—Student Teaching in Secondary Schools	8	..
Ed. 145—Principles and Methods of Secondary Education . . .	3	..
Ind. Ed. 23—Arc and Gas Welding . . . . .	..	1
Ind. Ed. 69—Machine Shop Practice I . . . . .	..	3
Ind. Ed. 105—General Shop . . . . .	..	2
Ind. Ed. 110—Foundry . . . . .	..	1
Econ. 37—Fundamentals of Economics . . . . .	..	3
Electives—(shopwork and/or drafting) ¹ . . . . .	..	4
Electives—(professional courses) . . . . .	..	5
Total	14	19

VOCATIONAL-INDUSTRIAL

The vocational-industrial curriculum is a four-year program of studies leading to a Bachelor of Science degree in education. It is intended to develop the necessary competencies for the effective performance of the tasks of a vocational teacher. In addition to establishing the adequacy of the student's skills in a particular trade and the development of instructional efficiency, the curriculum aims at the professional and cultural development of the individual. Courses are included which would enrich the persons scientific, economic, psychological and sociological understandings. The vocational-certification courses for the state of Maryland are a part of the curriculum requirements.

Persons pursuing this curriculum must present documentary evidence of having an apprenticeship or comparable learning period and journeyman experience. This evidence of background and training is necessary in order that the trade examination phase of the curriculum may be accomplished.

¹After the student has completed the basic courses in drafting, woodworking, metal-working, graphic arts and automotives he is to select advanced courses in one or more of these areas as advised.

Industrial Education Curriculum

Persons having completed the necessary certification courses prior to working on the degree program may use such courses toward meeting graduation requirements. However, after certification course requirements have been met, persons continuing studies toward a degree must take courses in line with the curriculum plan and University regulations. (e.g.) junior level courses cannot be taken until the student has reached full junior standing as set forth in the academic regulations for the University.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life	3	..
G. & P. 1—American Government .....	..	3
Speech 1—Public Speaking.....	3	..
Ind. Ed. 12—Shop Calculations	3	..
Math. 10—Algebra .....	..	3
A. S. 1, 2—Basic Air Science (men).....	$\frac{1}{2}^*$	2
P. E. 1, 3—Physical Activities	1	1
Total.....	13½	12
<i>Sophomore Year</i>		
H. 5, 6—History of American Civilization	3	3
Eng. 3, 4—Composition and World Literature or		
Eng. 5, 6—Composition and English Literature	3	3
Math. 11—Trigonometry and Analytic Geometry	3	..
Phys. 1, 2—Elements of Physics	3	3
Econ. 37—Fundamentals of Economics .....	..	3
A. S. 3, 4—Basic Air Science (men).....	2	$\frac{1}{2}$
P. E. 5, 7—Physical Activities.....	1	1
Total.....	15	13½
Note: The trade examination (20 semester hours) should be taken prior to entering the fifth semester of work. See regulations covering examination, page 28.		
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
Ind. Ed. 170—Principles of Vocational Education or		
Ind. Ed. 171—History of Vocational Education	2	..
Ind. Ed. 168—Trade or Occupational Analysis .....	..	2
Ed. 161—Principles of Guidance	3	..
Ed. 150—Educational Measurements .....	..	3
Ind. Ed. 165—Modern Industry .....	..	3
Soc. 115—Industrial Sociology	3	..
Electives	3	5
Total.....	18	20

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

Industrial Education Curriculum

Senior Year	Semester	
	I	II
Ind. Ed. 140—Curriculum, Instruction and Observation	3	..
Ind. Ed. 148—Student Teaching in Secondary Schools	8	..
Ed. 145—Principles and Methods of Secondary Education	3	..
Ind. Ed. 169—Course Construction .....	..	2
Econ. 160—Labor Economics .....	..	3
Ind. Ed. 150—Training Aids Development .....	..	3
Ind. Ed. 164—Shop Organization and Management .....	..	2
Electives .....	..	4
Total	14	14

STUDENT TEACHING REQUIREMENT.—Persons currently teaching in the secondary schools with three or more years of satisfactory experience at that level are not required to take Ind. Ed. 148—Student Teaching in Secondary Schools. Evidence of satisfactory teaching experience shall be presented in the form of written statements from the principal, area supervisor, and department head in the school where such teaching is done. Instead of the eight (8) credits required for student teaching, the individual meeting the above qualifications will have eight (8) additional semester hours of elective credits.

ELECTIVE CREDITS.—Courses in history and philosophy of education, sociology, speech, psychology, economics, business administration, and other areas may be taken with the permission of the student's adviser.

Elective courses in the technical area (shop and drawing) will be limited to courses and subjects not covered in the trade training experience. Courses dealing with advanced technology and recent improvements in field practices will be acceptable.

VOCATIONAL-INDUSTRIAL CERTIFICATION

A total of 240 clock hours of instruction is required for vocational-industrial teacher certification. The courses listed below are currently required:

- Ind. Ed. 50—Methods of Teaching
- Ind. Ed. 60—Observation and Demonstration Teaching
- Ind. Ed. 164—Shop Organization and Management
- Ind. Ed. 168—Trade or Occupational Analysis
- Ind. Ed. 169—Course Construction
- Ind. Ed. 170—Principles of Vocational Education, and/or
- Ind. Ed. 171—History of Vocational Education

"The remainder of the 240 clock hours are to be met through elective industrial education courses offered by the University of Maryland and approved by the State Supervisor of Industrial Education."* The courses from which electives may be chosen are:

*Maryland (State Department of Education). The Maryland State Plan for Vocational Education 1947-1952, p. 108.

- Ind. Ed. 150—Training Aids Development
- Ind. Ed. 157—Tests and Measurements
- Ind. Ed. 161—Principles of Vocational Guidance
- Ind. Ed. 165—Modern Industry
- Ind. Ed. 167—Problems in Occupational Education
- *Ind. Ed. 220—Organization, Administration and Supervision of Vocational Education
- Ind. Ed. 240—Research in Industrial Arts and Vocational Education
- Ind. Ed. 248—Seminar in Industrial Arts and Vocational Education
- Ed. 150—Educational Measurement
- Ed. 160—Educational Sociology
- Ed. 161—Principles of Guidance
- Ed. 253—Guidance Information
- Ed. 261—Practicum in School Counseling
- Ed. 269—Seminar in Guidance

A person in vocational-industrial education may use his certification courses toward a Bachelor of Science degree. In doing so the general requirements of the University and College of Education must be met. A maximum of twenty semester hours of credit may be earned through examination in the trade in which the student has competence. Prior to taking the examination, the student shall provide documentary evidence of his apprenticeship or learning period and journeyman experience. For further information about credit by examination refer to the publication *University General and Academic Regulations*.

EDUCATION FOR INDUSTRY

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence. The student who is enrolled in this curriculum is required to obtain work in industry in accordance with the plan described in the course, Industrial Education 124, a, b.

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life'	3	..
G. & P. 1—American Government' .....	..	3
Ind. Ed. 1—Mechanical Drawing	2	..
Ind. Ed. 12—Shop Calculations	3	..
Ind. Ed. 21—Mechanical Drawing .....	..	2
Ind. Ed. 22—Machine Woodworking 1	2	..
Ind. Ed. 23—Arc and Gas Welding .....	..	1

*A course bearing a "200" number is open only to graduate students.

'May be taken either semester.

Industrial Education Curriculum

	Semester	
	I	II
<i>Freshman Year (continued)</i>		
Ind. Ed. 69—Machine Shop Practice I .....	..	3
Ind. Ed. 110—Foundry .....	..	1
Speech 7—Public Speaking.....	2	..
A. S. 1, 2—Basic Air Science (men).....	½*	2
P. E. 1, 3—Physical Activities	1	1
Math. 10—Algebra .....	..	3
Total.....	16½	19
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature	2	..
Ind. Ed. 24—Sheet Metal Work	3	..
B. A. 10, Introduction to Business.....	3	..
Phys. 1, 2—Elements of Physics or	3 or 4	3 or 4
Phys. 10, 11—Fundamentals of Physics	2	..
Math. 11—Trigonometry and Analytic Geometry	2	½
A. S. 3, 4—Basic Air Science (men).....	1	1
P. E. 5, 7—Physical Activities .....	..	3
H. 5—History of American Civilization .....	..	3
Econ. 37—Fundamentals of Economics .....	..	3
Total.....	16-17	16½-17½
<i>Junior Year</i>		
H. 6—History of American Civilization	3	..
Psych. 1—Introduction to Psychology	3	..
Psych. 2—Applied Psychology .....	..	3
Chem. 1, 3—General Chemistry	4	4
Econ. 160—Labor Economics	3	..
Ind. Ed. 124a—Organized and Supervised Work Experience¹..	3	..
Ind. Ed. 143, 144—Industrial Safety Education	2	2
B. A. 160—Personnel Management .....	..	3
Soc. 115—Industrial Sociology .....	..	3
Electives	3	3
Total	21	18

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹Must be pursued concurrently with the regular summer sessions between the sophomore and junior and the junior and senior years respectively.

	Semester	
Senior Year		
B. A. 163—Industrial Relations	3	..
B. A. 167—Job Evaluation and Merit Rating	2	..
Ind. Ed. 124b—Organized and Supervised Work Experience ¹ ..	3	..
Ind. Ed. 164—Shop Organization and Management .....	..	2
Ind. Ed. 165—Modern Industry .....	..	3
Ind. Ed. 168—Trade or Occupational Analysis	2	..
Psych. 161—Industrial Psychology .....	..	3
Electives	5	8
Total	15	16

¹Must be pursued concurrently with the regular summer sessions between the sophomore and junior and the junior and senior years respectively.

MUSIC EDUCATION

The music education curriculum affords pre-service preparation in the specialized field of music education and leads to the degree of Bachelor of Science in education with a major in public school music. The curriculum provides training in both the choral and instrumental fields of music and is planned to meet the growing demand for special teachers and supervisors in those areas. In the junior and senior years the student may elect either the vocal option or the instrumental option.

A minor in the field may be received with 24 semester hours in music education, theory, and history; 8 semester hours in applied music; two semester hours in ensemble; Mus. Ed. 129 or 132; and student teaching divided between the student's major and minor fields. The 24 specified hours must include Music 1, 7, 8, 70, 80 or 81, 121, and 160 or 161.

MUSIC EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Ed. 1—Freshman Orientation	0	..
Speech 4—Voice and Diction.....	3	..
Music 1—Introduction to Music .....	..	3
Music 7, 8—Theory of Music	3	3
Music 12, 13—Applied Music (principal instrument)	2	2
Music 23, 24—Class Piano ¹	2	2
Physical Activities	1	1
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.	1	1
A. S. 1, 2 (men) or Hea. 2, 4 (women).....	½*-2	2-2
	---	---
Total.....	15½-17	17
<i>Sophomore Year</i>		
Eng. 3, 4, or 5, 6—Composition and Literature	3	3
Mathematics or Science	3	3
Ed. 2—Introduction to Education	2	..
Music 52, 53—Applied Music (principal instrument)	2	2
Music 70, 71—Harmony	4	4
Music 21—Class Voice ² .....	..	2
Physical Activities	1	1
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.	1	1
A. S. 3, 4 (men)—Basic Air Science.....	2	½
	---	---
Total.....	18	16½

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹Piano majors take Music 33, 34, Advanced Class Piano.

²Voice majors take Music 33, Advanced Class Piano.

	Semester	
	I	II
<i>Junior Year—Vocal Option</i>		
H. D. Ed. 100, 101—Principles of Human Development....	3	3
H. 5, 6—History of American Civilization.....	3	3
Music 22—Class Voice ¹	2	..
Music 31—Advanced Class Voice.....	..	2
Music 80—Class Study of Strings.....	2	..
Music 112, 113—Applied Music (principal instrument).....	2	2
Music 121—History of Music .....	..	3
Music 160—Conducting	2	..
Ed. 145—Principles of High School Teaching.....	3	..
Mus. Ed. 139—Music for the Elem. School Specialist .....	..	2
Mus. Ed. 132—Music in the Secondary School .....	..	2
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	18

Senior Year—Vocal Option

Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology ¹	3	..
G. & P. 1—American Government.....	3	..
Music 32—Advanced Class Voice.....	2	..
Music 81—Class Study of Winds.....	2	..
Music 120—History of Music.....	3	..
Music 147—Orchestration	2	..
Music 152—Applied Music (principal instrument).....	2	..
Ed. 148, 149—Student Teaching .....	..	8
Mus. Ed. 173—Vocal Music Teacher and School Organization .....	..	2
Music 161—Conducting .....	..	2
Electives .....	..	3
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	16

Junior Year—Instrumental Option

H. D. Ed. 100, 101—Principles of Human Development....	3	3
H. 5, 6—History of American Civilization.....	3	3
Music 22—Class Voice	2	..
Music 80, 82—Class Study of Strings.....	2	2
Music 160, 161—Conducting	2	2
Music 112—Applied Music (principal instrument).....	..	2
Music 121—History of Music.....	..	3
Ed. 145—Principles of High School Teaching.....	3	..
Music 147—Orchestration	2	..
Mus. Ed. 132—Music in the Secondary School .....	..	2
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	18

¹ Voice majors take Music 34, Advanced Class Piano.

² Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3).

Physical and Health Education Curriculums

	Semester	
	I	II
<i>Senior Year—Instrumental Option</i>		
G. & P. 1—American Government.....	3	..
Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology ¹	3	..
Music 81, 83—Class Study of Winds.....	2	2
Music 120—History of Music.....	3	..
Mus. Ed. 129—Instrumental Methods	2	..
Music 113, 152—Applied Music (principal instrument)....	2	2
Ed. 148, 149—Student Teaching.....	..	8
Mus. Ed. 163—Band Techniques and Administration	2	..
Electives .....	..	3
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	16

PHYSICAL EDUCATION AND HEALTH EDUCATION

PHYSICAL EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum will be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. This basic training makes it possible for the student to select related areas, especially in the fields of biology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

PHYSICAL EDUCATION CURRICULUM FOR MEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ² ..	3	..
G. & P. 1—American Government ³.....	..	3
Zool. 1—General Zoology.....	..	4
Sp. 7—Public Speaking.....	2	..
Speech 7—Public Speaking.....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 50—Rhythmic Analysis and Movement.....	1	..
P. E. 59—Skills in Folk, Square and Social Dance.....	..	1

¹ Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3).

² Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

³ May be taken either semester.

Physical and Health Education Curriculums

	Semester	
	I	II
<i>Freshman Year* (Continued)</i>		
P. E. 61, 63—Sport Skills and Gymnastics.....	2	2
A. S. 1, 2—Basic Air Science.....	1½**	2
Electives	1	4
	<hr/>	<hr/>
Total.....	14½	19
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Physical Science Group Requirement (mathematics, physics or chemistry)	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 65, 67—Sport Skills and Gymnastics	2	2
A. S. 3, 4—Basic Air Science.....	2	½
Electives	1	1
	<hr/>	<hr/>
Total.....	18-19	16½
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
P. E. 77—Methods of Teaching Aquatics .....	..	2
P. E. 100—Kinesiology	4	..
P. E. 101, 103—Organization and Officiating in Intramurals..	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools	3	1
P. E. 123 or 125—Coaching Athletics	3	..
P. E. 180—Measurement in Physical Education and Health..	..	3
Hea. 50—First Aid and Safety .....	..	1
Electives ²	5	8
	<hr/>	<hr/>
Total	19	19
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation.....	..	3
P. E. 160—Theory of Exercise.....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in Secondary Schools ¹.....	..	8
Electives ²	15	..
	<hr/>	<hr/>
Total.....	18	17

*Students classified in Group 3 on Mathematics Entrance Test must take Math. 0. P. E. 71 may be required, depending upon swimming ability of student.

**Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹May be taken either semester. The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools). When Ed. 148 is scheduled, Ed. 145, P. . 140, and P. E. 190 must be scheduled concurrently.

²Every student in junior or senior year must elect either Hea. 120, P. E. 120 or Rec. 170.

Physical Education Curriculum

PHYSICAL EDUCATION CURRICULUM FOR WOMEN

	Semester	
	I	II
<i>Freshman Year*</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy For Modern Man or Psych. 1—Introduction to Psychology ¹	3	..
G. & P. 1—American Government ².....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking.....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 40—Basic Body Controls	1	..
P. E. 50—Rhythmic Analysis and Movement	2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56—Skills and Methods in Folk and Square Dance .....	..	1
P. E. 62, 64—Elementary Techniques of Sports and Gymnastics	2	2
Electives .....	..	2
Total	15	16
<i>Sophomore Year**</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Physical Science Group Requirement—(mathematics, physics or chemistry)	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 54—Dance Techniques	1	..
P. E. 58—Skills and Methods in Social Dance	1	..
P. E. 60—Dance Composition .....	..	2
P. E. 66, 68—Techniques of Sports	2	2
Total	17-18	17
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
P. E. 78—Methods of Teaching Aquatics.....	..	2
P. E. 82, 84—Officiating ³	0	0
P. E. 100—Kinesiology	4	..

*P. E. 72 may be required, depending upon swimming ability of student.

Students classified in Group 3 in Mathematics Entrance Test must take Math. 0.

**P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

¹Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

²May be taken either semester.

³Students must hold one officials rating to be eligible for student teaching.

	Semester	
	I	II
<i>Junior Year (Continued)</i>		
P. E. 114, 116—Methods in Physical Education for Secondary Schools	3	1
P. E. 124, 126—Practicum in Leadership.....	2	2
P. E. 180—Measurement in Physical Education and Health	3	..
Hea. 50—First Aid and Safety.....	..	1
Electives ¹ .....	..	7
Total.....	15	16
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation.....	..	3
P. E. 160—Theory of Exercise.....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in Secondary Schools ².....	..	8
Electives ¹	12	..
Total.....	15	17

Minor in Physical Education—20 semester hours in physical education and 4 semester hours in cognate areas.

Required Courses—Men—P. E. 30; P. E. 61, 63, 65, 67, (2-6*); P. E. 113; P. E. 101 or 103.

Women—P. E. 30; P. E. 62, 64, 66, 68, (2-6*); P. E. 114, 116; P. E. 124, 126.

Elective Courses—Men and Women—P. E. 78, 100; P. E. 123; P. E. 125; P. E. 140; P. E. 160; P. E. 180; P. E. 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150; Rec. 170.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include P. E. 123 or P. E. 125 if planning to coach.

Note: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; P. E. 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

*Selection of courses will be made according to student's background and interests upon consultation with the physical education adviser.

¹Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

²May be taken either semester. The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools). When Ed. 148 is taken, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently.

Health Education Curriculum

MINOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

Men and women physical education major students who desire to prepare for positions in elementary school physical education should take 13 semester hours in elementary school physical education courses and 10 hours in cognate areas. *Required courses*—P.E. 55, 57, 120, 130, 195. *Elective courses*—10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and childhood education.

HEALTH EDUCATION CURRICULUM FOR MEN

<i>Freshman Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology ¹	3	..
G. & P. 1—American Government ².....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking.....	2	..
Hea. 10—Orientation to Health Education.....	..	1
Hea. 30—Introduction to Physical Education, Recreation and Health	2	..
P. E. 1—Orientation to Physical Education	1	..
P. E. 3—Developmental and Combative Sports .....	..	1
Chem. 11, 13—General Chemistry	3	3
A. S. 1, 2—Basic Air Science.....	½*	2
Electives	1	1
Total	15½	18

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the Air Science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹ Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

² May be taken either semester.

Health Education Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Hea. 40—Personal and Community Health	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 5—Team Sports & Aquatics	1	..
P. E. 7—Recreational Activities .....	..	1
A. S. 3, 4—Basic Air Science.....	2	½
Electives	3	1
Total	19	16½
<i>Junior Year</i>		
Microb. 1—General Microbiology	4	..
Microb. 108—Epidemiology and Public Health.....	..	2
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education	2	..
Hea. 120 Methods and Materials in Health Education .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives	3	4
Total	17-18	18
<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction and Observation	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education	3	..
Ed. 145—Principles and Methods of Secondary Education	3	..
Ed. 148—Student Teaching in Secondary Schools ¹	8	..
Electives .....	..	14
Total	17	17

¹ May be taken either semester. When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently.

Health Education Curriculum

HEALTH EDUCATION CURRICULUM FOR WOMEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ¹	3	..
G. & P. 1—American Government ².....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking.....	2	..
Hea. 10—Orientation to Health Education.....	..	1
Hea. 30—Introduction to Physical Education, Recreation and Health	2	..
P. E. 2, 4—Orientation Activities and Swimming	1	1
Chem. 11, 13—General Chemistry	3	3
Electives	3	3
Total	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Hea. 40—Personal and Community Health	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 6, 8—Dance and Sports	1	1
Electives	3	3
Total	17	18
<i>Junior Year</i>		
Microb. 1—General Microbiology	4	..
Microb. 108—Epidemiology and Public Health.....	..	2
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education.....	2	..
Hea. 120—Methods and Materials in Health Education.....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives	3	4
Total.....	17-18	18

¹ Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

² May be taken either semester.

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Hea. 140—Curriculum, Instruction and Observation	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education	3	..
Ed. 145—Principles and Methods of Secondary Education	3	..
Ed. 148—Student Teaching in Secondary Schools ¹	8	..
Electives .....	..	14
Total	17	17

Minor in Health Education—12 semester hours in Health Education and 12 semester hours in related areas.

Required Courses—Hea. 2 and 4, or Hea. 40 (women); Hea. 40 (men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

Elective Courses in related areas—6 semester hours of biological sciences and 6 semester hours of psychology or human development.

Minor in Safety Education—Students wishing to obtain a minor in safety education and become certified to teach Safety and Driver Education in junior and senior high schools should take the following courses Hea. 50 (1), Hea. 60 (2), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3), Hea. 145 (3), F. P. 104 (3), 22 (105).

SPECIAL EDUCATION

A minor of 18 hours is offered in special education with a major in early childhood, elementary or secondary education. This minor is arranged to increase the understanding and competencies of prospective teachers with exceptional children.

SPECIAL EDUCATION MINORS

**Early Childhood Education*—Students majoring in childhood education are offered a minor in special education. The following courses should be taken: Sp. Ed. 170 (3), Sp. Ed. 171 (3), Sp. Ed. 172 (3), Sp. Ed. 173 (3), Speech 105 (3) and Hea 150 (3).

**Elementary Education*—Students majoring in elementary education are offered a minor in special education. The following courses should be taken: Sp. Ed. 170 (3), Sp. Ed. 171 (3), Sp. Ed. 172 (3), Sp. Ed. 173 (3), Ed. 189 (Summer Workshop in Special Education).

**Secondary Education*—Students majoring in secondary education are offered a minor in special education. The following courses should be taken: Sp. Ed. 170 (3), Sp. Ed. 171 (3), Sp. Ed. 172 (3), Sp. Ed. 173 (3); plus six semester hours selected from: Ed. 189 (3-6), Speech 105 (3), Hea. 150 (3), Ind. Ed. 9 (2), Nut. 10 (3), Ed. 147 (3).

**Student Teaching*—Students taking a minor in special education should have one-half of the hours of student teaching in a special class.

¹ May be taken either semester. When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students has registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

EDUCATION

Courses Primarily for Freshmen and Sophomores

Ed. 1. Freshman Orientation. (0)

Required of all freshmen.

Ed. 2. Introduction to Education. (2)

First and second semesters. Required of sophomores in Education. Section 1—Elementary; Section 2—Secondary. Laboratory fee, \$1.00. An exploratory course designed to introduce students to responsibilities of teachers for understanding their pupils, the way learning takes place, the need for planning, types of competencies needed, and certification requirements. (Fish, Schwarz, P. Anderson.)

Ed. 6. Observation of Teaching. (1)

Twenty hours of directed observation. Reports, conferences, and criticisms.

Ed. 52. Children's Literature. (2-3)

First and second semesters. Prerequisites, Eng. 1, 2. A study of literary values in prose and verse for children. (D. Brown.)

Ed. 90. Development and Learning. (3)

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

For Advanced Undergraduates and Graduates

Ed. 100. History of Education in Western Civilization. (3)

Educational institutions through the ancient, mediaeval, and early modern periods in the western civilization, as seen against a background of socio-economic development. (Wiggin.)

Ed. 102. History of Education in the United States. (3)

A study of the origins and development of the chief features of the present system of education in the United States. (Wiggin.)

Ed. 107. Philosophy of Education. (2-3)

A study of the great educational philosophers and systems of thought affecting the development of modern education. (Wiggin.)

Ed. 121. The Language Arts in the Elementary School. (2-3)

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given to skills having real significance to pupils. (Denecke, Fish, Schwarz.)

Ed. 122. The Social Studies in the Elementary School. (2-3)

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources. (O'Neill.)

Ed. 123. The Child and the Curriculum. (3)

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children. (Denecke.)

Ed. 124. Arithmetic in the Elementary School. (2-3)

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes. (Schindler.)

Ed. 125. Art in Elementary Schools. (2)

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools. (Lembach.)

Ed. 127. Teaching in Elementary Schools. (2-6)

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience. (Staff.)

Ed. 130. The Junior High School. (2-3)

A general overview of the junior high school. Purposes, functions and characteristics of this school unit; a study of its population, organization, program of studies, methods, staff, and other similar topics, together with their implications for prospective teachers. (Staff.)

Ed. 133. Methods of Teaching Social Studies in Secondary School. (2-3)

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adaption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies. (Risinger.)

Education

Ed. 134. Materials and Procedures for the Secondary School Core Curriculum. (3)

Laboratory fee, \$1.00. This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. (Grambs.)

Ed. 137. Methods of Teaching Mathematics and Science in Secondary School. (2-3)

Laboratory fee, \$2.00. Considers such topics as objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of mathematics, the physical sciences, and the biological sciences. (Ulry, Mayor.)

Ed. 140. Curriculum, Instruction, and Observation. (3)

First and/or second semesters. Offered in separate sections for the various subject matter areas, namely, English, social studies, foreign language, science, mathematics, art education, business education, industrial education, music education, and physical education. Registration cards must include the subject-matter area as well as the name and number of the course. Graduate credit is allowed only by special arrangement. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation. Students must reserve all day each Wednesday for observation in public schools. (Staff.)

Ed. 141. Methods of Teaching English in Secondary Schools. (3)

Content and method in teaching the English language arts. (Bryan.)

Ed. 142. Oral-aural Method in Teaching Foreign Languages. (3)

Graduate credit allowed by special arrangement and adviser's approval. Designed for high school teachers. Methods in making and using tape recordings, using electronic laboratories, developing oral-aural skills and direct approach to language teaching are emphasized. (Mendeloff.)

Ed. 143. Foreign Language Methods in Elementary Schools. (3)

Graduate credit allowed by special arrangement and adviser's approval. Registration limited and based upon approval of adviser. Methods and techniques for developmental approach to the teaching of modern foreign languages in elementary schools. Use of realia, development of oral-aural skills and understanding of young children in language development are stressed. (Mendeloff.)

Ed. 145. Principles and Methods of Secondary Education. (2-3)

First and second semesters; summer session. This course is concerned with the principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields are considered in relation to the needs and interests of youth, the urgent social problems of today, and the central values to which our society is committed. (McClure, Grambs, Risinger.)

Ed. 147. Audio-Visual Education. (3)

First semester and summer session. Laboratory fee, \$1.00. Sensory impressions in their relation to learning projection apparatus, its cost and operation; slides, film-strips,

and films; physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students. (Maley.)

Ed. 148. Student Teaching in Secondary Schools. (2-8)

First and second semesters. Prerequisite, Ed. 140*. Fee, \$24 for students who do not pay the regular instructional materials fee. In order to be admitted to a course in student teaching, a student must have an overall grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor to the appropriate area. He must have been previously enrolled at the University of Maryland for at least one semester. A review committee on student teaching will assist instructors in valuating all special cases. Undergraduate credit only. Application forms for this course must be submitted to the appropriate adviser by the middle of the semester preceding the one in which an assignment is desired. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of one semester is devoted to this work. For experienced teachers, some graduate students and students in physical education and music education who are planning a split student teaching assignment in elementary and secondary schools, the time and credit may be modified. (Staff.)

Ed. 149. Student Teaching in Elementary Schools. (4-16)

Fee, \$24 for students who do not pay the regular instructional materials fee. A grade-point average of 2.30, a doctor's certificate indicating freedom for communicable diseases, and approval of the instructor required. A review committee on student teaching will assist instructors in evaluating all special cases. Undergraduate credit only. No other courses may be taken during the semester of student teaching. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 16 credits, full time for one semester is devoted to this work. For experienced teachers, the time and credit may be reduced. May be taken for 4 hours credit in combination with a comparable student teaching assignment at the secondary level, by music education and physical education majors with the permission of their advisers. (Staff.)

Ed. 150. Educational Measurement. (3)

First and second semesters; summer session. Constructing and interpreting measures of achievement. (Johnson.)

Ed. 151. Statistical Methods in Education. (3)

Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability, and association. (Johnson.)

Ed. 153. The Teaching of Reading. (2-3)

Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs. (Fish, Massey, Schindler.)

*For music education majors the prerequisites for student teaching are as follows: *vocal emphasis*: Music Ed. 132 and 173; *instrumental emphasis*: Music Ed. 132, 163, and 129.

Education

Ed. 154. *Remedial Reading Instruction.* (3)

Prerequisite, Ed. 153 or the equivalent. For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures.

(Massey.)

Ed. 155. *Laboratory Practices in Reading for Elementary and Secondary School.* (2-4)

Prerequisite, Ed. 153 or Ed. 154. A laboratory course in which each student has one or more pupils for analysis and instruction. At least one class meeting per week to diagnose individual cases and to plan instruction.

(Massey.)

Ed. 160. *Educational Sociology.* (3)

Deals with data of the social sciences which are germane to the work of teachers. Implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background.

(Risinger, Grambs.)

Ed. 161. *Principles of Guidance.* (3)

First and second semesters, summer session. Overview of principles and practices of guidance-oriented education.

(Byrne, Marx.)

Ed. 162. *Mental Hygiene in the Classroom.* (3)

The practical application of the principles of mental hygiene to classroom problems.

(Denecke.)

Ed. 163, 164, and 165. *Community Study Laboratory I, II and III.* (2, 2, 2)

Involves experience from the educational standpoint with the agencies, institutions, cultural patterns, living conditions, and social processes which play significant roles in shaping the behavior of children and adults and which must be understood by individuals working toward school and community improvement. Each participant becomes a member of a group in a given area of study and concentrates on problems which have direct application in his school situation. Readings are integrated with techniques of study.

Ed. 187. *Field Experience in Education.* (1-4)

- | | |
|-------------------------------|------------------------------------|
| a. Adult Education | e. Higher Education |
| b. Curriculum and Instruction | f. Industrial Arts Education |
| c. Educational Administration | g. Supervision |
| d. Guidance and Personnel | h. Vocational-Industrial Education |

Prerequisites, at least six semester hours in education at the University of Maryland plus such other prerequisites as may be set by the major area in which the experience is to be taken. Planned field experience may be provided for selected graduate students who have had teaching experience and whose application for such field experience has been approved by the Education faculty. Field experience is offered in a given area to both major and non-major students.

Ed. 188. *Special Problems in Education.* (1-3)

Prerequisite, consent of instructor. Available only to mature students who have definite

plans for individual study of approved problems. *Course cards must have the title of the problem and the name of the faculty member who has approved it.* (Staff.)

Ed. 189. Workshops, Clinics, and Institutes. (1-6)

The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. (Staff.)

Ed. 190. Problems and Trends in Contemporary American Education. (2-4)

Designed to present a broad overview of some key issues and trends that relate to the improvement of instruction at elementary, secondary and teacher education levels. Lectures by visiting educators of national prominence will be reviewed and analyzed in discussion groups led by regular University staff members. (Staff.)

For Graduates

Ed. 202. The Junior College. (2)

The philosophy and development of the junior college in the United States with emphasis on education and administrative controls. (Staff.)

Ed. 203. Problems in Higher Education. (3)

A study of present problems in higher education. (Wiggin, Kelsey.)

Ed. 205. Comparative Education. (3)

A study of historical changes in ways of looking at national school systems, and of problems in assessing their effectiveness. (Wiggin.)

Ed. 206. Seminar in Comparative Education. (2)

(Wiggin.)

Ed. 207. Seminar in History and Philosophy of Education. (2)

(Wiggin.)

Ed. 209. Adult Education. (3)

A study of adult education in the United States, with attention to adult abilities and intelligence, programs of adult education, and a rationale for adult education.

(Wiggin.)

Ed. 210. The Organization and Administration of Public Education. (3)

First semester. The basic course in school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved. (Newell.)

Ed. 211. The Organization, Administration, and Supervision of Secondary Schools. (3)

Second semester. The work of the secondary school principal. Includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting. (P. Anderson.)

Education

Ed. 212. *School Finance and Business Administration.* (3)

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered. (Van Zwoll.)

Ed. 214. *School Plant Planning.* (2)

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment. (Van Zwoll.)

Ed. 216. *Public School Supervision.* (3)

The nature and functions of supervision; various supervisory techniques and procedures; human relationship factors; and personal qualities for supervision. (P. Anderson.)

Ed. 217. *Administration and Supervision in Elementary Schools.* (3)

Problems in administering elementary schools and improving instruction. (Denecke.)

Ed. 218. *School Surveys.* (2-6)

Prerequisite, consent of instructor. Includes study of school surveys with emphasis on problems of school organization and administration, finance and school plant planning. Field work in school surveys is required. (Newell.)

Ed. 219. *Seminar in Educational Administration and Supervision.* (2-4)

Prerequisite, at least four hours in educational administration and supervision or consent of instructor. A student may register for two hours and may take the seminar a second time for an additional two hours. (Staff.)

Ed. 220. *Pupil Transportation.* (2)

Includes consideration of the organization and administration of state, county, and district pupil transportation service with emphasis on safety and economy. The planning of bus routes; the selection and training of bus drivers, and maintenance mechanics; the specification of school buses; and procurement procedures are included. (Staff.)

Ed. 221. *Advanced School Plant Planning.* (2)

Ed. 214 is a prerequisite to this course. However, students with necessary background may be admitted without completion of Ed. 214. This is an advanced course in school plant planning problems. Emphasis is given to analysis of the educational program and planning of physical facilities to accommodate that program. (Van Zwoll.)

Ed. 223. *Practicum in Personnel Relationships.* (2-6)

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers, school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems. (Newell.)

Ed. 224. *Apprenticeship in Education.* (6-9)

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|-------------------------------|------------------------------------|
| a. Curriculum and Instruction | e. Industrial Arts Education |
| b. Educational Administration | f. Supervision |
| c. Guidance and Personnel | g. Vocational Industrial Education |
| d. Higher Education | |

Apprenticeships in the major area of study are available to selected students whose application for an apprenticeship has been approved by the Education faculty. Each apprentice is assigned to work for at least a semester full-time or the equivalent with an appropriate staff member of a cooperating school, school system, or educational institution or agency. The sponsor of the apprentice maintains a close working relationship with the apprentice and the other persons involved. Prerequisites, teaching experience, a master's degree in education, and at least six semester hours in education at the University of Maryland. (Staff.)

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

Ed. 225. School Public Relations. (3)

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored. (Van Zwoll.)

Ed. 226. Child Accounting. (2)

An inquiry into the record keeping activities of the school system, including an examination of the marking system. (Van Zwoll.)

Ed. 227. Public School Personnel Administration. (3)

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits. (Van Zwoll.)

Ed. 228. Seminar in Student Personnel. (2)

Prerequisite, consent of instructor. (Same as Psych. 228) A systematic analysis of research and theoretical literature on a variety of major problems in the organization and administration of student personnel services in higher education. Included will be discussion of such topics as the student personnel philosophy in education, counseling services, discipline, housing student activities, financial aid, health, remedial services, etc. (Byrne, Magoon, Marx.)

Ed. 229. Seminar in Elementary Education. (2)

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in education. (Staff.)

Ed. 234. The School Curriculum. (2-3)

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design. (Hovet.)

Ed. 235. Principles of Curriculum Development. (3)

Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement. (Hovet, V. Anderson.)

Ed. 237. Curriculum Theory and Research. (2)

The school curriculum considered within the totality of factors affecting pupil behavior patterns, an analysis of research contributing to the development of curriculum theory,

Education

a study of curriculum theory as basic to improved curriculum design, the function of theory in guiding research, and the construction of theory through the utilization of concepts from the behavior research disciplines. (Hovet.)

Ed. 239. *Seminar in Secondary Education.* (2)

(Risinger.)

Ed. 242. *Coordination in Work-Experience Programs.* (2)

Surveys and evaluates the qualifications and duties of a teacher-coordinator in a work-experience program. Deals particularly with evolving patterns in city and county schools in Maryland, and is designed to help teacher-coordinators, guidance counselors, and others in the supervisory and administrative personnel concerned with functioning relationships of part-time cooperative education in a comprehensive educational program. (Merrill.)

Ed. 243. *Problems of Teaching Arithmetic in Elementary Schools.* (2)

Implications of theory and results of research for the teaching of arithmetic in the elementary schools. (Schindler.)

Ed. 244. *Problems of Teaching Language Arts in Elementary Schools.* (2)

Implications of current theory and results of research for the language arts in the elementary schools. (Staff.)

Ed. 245. *Introduction to Research.* (2)

Intensive reading, analysis, and interpretations of research, applications as teaching fields; the writing of abstracts, research reports, and seminar papers. (Hovet.)

Ed. 246. *Problems of Teaching Social Studies in Elementary Schools.* (2)

Application to the social studies program of selected theory and research in the social sciences, emphasizing patterns of behavior, environmental influences, and critical thinking. (O'Neill.)

Ed. 247. *Seminar in Science Education.* (2)

An opportunity to pursue special problems in curriculum marking, course of study development, or other science teaching problems. Class members may work on problems related directly to their own school situations. (Blough, Ulry.)

Ed. 248. *Seminar in Industrial Arts and Vocational Education.* (2)

(See Ind. Ed. 248)

(Staff.)

Ed. 250. *Analysis of the Individual.* (3)

Prerequisites, Ed. 161, Ed. 151, Ed. 263, or permission of instructor. Collecting and interpreting non-standardized pupil appraisal data; synthesis of all types of data through case study procedures. (Byrnes.)

Ed. 251. *Intermediate Statistics in Education.* (3)

Prerequisite, Education 151 or equivalent. A study of the basic statistical techniques used for graduate research in education, including tests of significance and sampling techniques. Necessary arithmetic skills are developed as part of the course. (Johnson.)

Ed. 253. *Occupational Choice: Theory and Information.* (2)

Research and theory related to occupational and educational decisions; school programs of related information and other activities in occupational decisions. (Byrne.)

Ed. 254. Organization and Administration of Guidance Programs. (2)

Prerequisite, permission of instructor. Instilling the guidance point of view and implementing guidance practices. All guidance courses except Seminar are prerequisites. (Marx.)

Ed. 260. School Counseling: Theoretical Foundations and Practice. (3)

Prerequisites, Ed. 161, 250, 253. Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories. (Byrne.)

Ed. 261. Practicum in Counseling. (2-6)

Prerequisites, Ed. 260 and permission of instructor. Sequence of supervised counseling experiences of increasing complexity. Limited to eight applicants in advance. Two hour class plus laboratory. (Byrnes, Marx, Schmidt.)

Ed. 262. Measurement in Pupil Appraisal. (3)

Prerequisite, Ed. 150. Study of group tests typically employed in school testing programs; discussion of evidence relating to the measurement of abilities. (Johnson.)

Ed. 265. Theory of Measurement. (2)

Prerequisites, Ed. 150 and Ed. 151. Treats such topics as theory and techniques used in various scaling methods, test analysis, predictive accuracy of scores, and equivalence of scores. For students desiring more advanced treatment of problems. (Johnson.)

Ed. 267. Curriculum Construction Through Community Analysis. (2)

Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on Baltimore area. (Schindler.)

Ed. 268. Seminar in Educational Sociology. (2)

(Staff.)

Ed. 269. Seminar in Guidance. (2)

Systematic examination of research related to various guidance topics. For advanced guidance majors, and others by permission of instructor. (Staff.)

Ed. 271. Advanced Statistics in Education. (3)

Prerequisites, Ed. 251 or equivalent. Primarily for the education student desiring more advanced work in statistical methodology. Survey of major types of statistical design in educational research; application of multivariate statistical techniques to educational problems. (Johnson.)

Ed. 279. Seminar in Adult Education. (2)

(Wiggin.)

Ed. 280. Research Methods and Materials. (2)

Research methodology for case studies, surveys, and experiments; measurement and statistical techniques; design, form, and style for theses and research reports. Primarily for advanced students and doctoral candidates. (Johnson.)

Ed. 281. Source Materials in Education. (2)

Bibliography development through a study of source materials in education, special fields in education, and for seminar papers and theses. (Wiggin.)

Education

Ed. 287. *Internship in Education.* (12-16)

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| a. Curriculum and Instruction | d. Industrial Arts Education |
| b. Educational Administration | e. Supervision |
| c. Guidance and Personnel | f. Vocational-Industrial Education |

Internships in the major area of study are available to selected students who have teaching experience. The following groups of students are eligible: (a) any student who has been advanced to candidacy for the doctor's degree, and (b) any student who receives special approval by the Education faculty for an internship, provided that prior to taking an internship, such student shall have completed at least sixty semester hours of graduate work, including at least six semester hours in education at the University of Maryland. Each intern is assigned to work on a full-time basis for at least a semester with an appropriate staff member in a cooperating school, school system, or educational institution or agency. The internship must be taken in a school situation different from the one where the student is regularly employed. The intern's sponsor maintains a close working relationship with the intern and the other persons involved.

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

Ed. 288. *Special Problems in Education.* (1-6)

First and second semesters and summer session. Master of Education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number. *Course card must have the title of the problem and the name of the faculty member under whom the work will be done.* (Staff.)

Ed. 290. *Doctoral Seminar.* (1-3)

Prerequisite, passing the preliminary examination for a doctor's degree in education or recommendation of a doctoral adviser. Analysis of doctoral projects and theses, and of other or going research projects. A doctoral candidate may participate in the Seminar during as many University sessions as he desires, but may earn no more than three semester hours of credit in the Seminar. An Ed.D. candidate may earn in total no more than nine semester hours, and a Ph.D. candidate, no more than eighteen semester hours, in the Seminar and in Ed. 399. (Johnson.)

Ed. 399. *Research—Thesis.* (1-6)

First and second semesters; summer session. Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number. (Staff.)

BUSINESS EDUCATION

For Advanced Undergraduates and Graduates

B. Ed. 100. *Techniques of Teaching Office Skills.* (3)

First semester. An examination and evaluation of the aims, methods, and course contents of each of the office skill subjects offered in the high school curriculum. (Patrick.)

B. Ed. 101. Problems in Teaching Office Skills. (2)

Problems in development of occupational competency, achievement tests, standards of achievement, instructional materials, transcription, and the integration of office skills. (Patrick.)

B. Ed. 102. Methods and Materials in Teaching Bookkeeping, and Related Subjects. (2)

Important problems and procedures in the mastery of bookkeeping and related office knowledges and the skills including a consideration of materials and teaching procedures. (Patrick.)

B. Ed. 104. Basic Business Education in the Secondary Schools. (2)

Includes consideration of course objectives; subject matter selection; and methods of organizing and presenting business principles, knowledges, and practices. (Patrick.)

For Graduates

B. Ed. 200. Administration and Supervision of Business Education. (2)

Major emphasis on departmental organization, curriculum, equipment, budget-making, guidance, placement and follow-up, visual aids and the in-service training of teachers. For administrators, supervisors, and teachers of business subjects. (Staff.)

B. Ed. 255. Principles and Problems of Business Education. (2)

Principles and practices in business education; growth and present status; vocational business education; general business education relation to consumer education and to education in general. (Patrick.)

B. Ed. 256. Curriculum Development in Business Education. (2-6)

This course is especially designed for graduate students interested in devoting the summer session to a concentrated study of curriculum planning in business education. Emphasis will be placed on the philosophy and objectives of the business education program, and on curriculum research and organization of appropriate course content. (Staff.)

CHILDHOOD EDUCATION

C. Ed. 2. Introduction to Childhood Education. (2)

First and second semesters. Orientation to nursery school, kindergarten, and other aspects of the field of childhood education. (Yuill.)

For Advanced Undergraduates and Graduates

C. Ed. 50. Child Development I. (3)

First semester. An intensive study of the normal child's social, emotional, physical, and intellectual development, from the prenatal period to the nursery school years. (Broome.)

C. Ed. 51. Child Development II. (3)

Second semester. A continuation of Child Development I, through the early childhood years. (Broome.)

Childhood Education

C. Ed. 110. *Child Development III*. (3)

First and second semesters. Developmental growth of the child from the prenatal period through the early childhood years, with implications for home and school practice. For students in other colleges of the University. (Hymes.)

C. Ed. 115. *Children's Activities and Activities Materials*. (3)

First and second semesters. Prerequisites, C. Ed. 50, 51, or 110. Laboratory fee, \$5.00. Storytelling, selection of books, the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials. (Broome.)

C. Ed. 116. *Creative Music for Young Children*. (2-3)

First and second semesters. Prerequisite, Music 16 or equivalent. Creative experiences in songs and rhythms, correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level. (L. Brown.)

C. Ed. 119. *Curriculum, Instruction, and Observation—Cooperative Nursery School*. (2-3)

C. Ed. 140. *Curriculum, Instruction, and Observation—Early Childhood Education (Nursery School and Kindergarten)*. (3)

Prerequisites, C. Ed. 50, 51, or 110. Philosophy of early childhood education, observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which educational objectives are attained. (Stant and Staff.)

C. Ed. 145. *Guidance of Young Children*. (3)

First and second semesters. Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems. (Hymes.)

C. Ed. 149. *Teaching Nursery School*. (4-8)

First and second semesters. Fee, \$24 for students who do not pay the regular instructional materials fee. Admission to student teaching depends upon physical and emotional fitness, and upon approval of the staff of the Department. A doctor's certificate indicating freedom from communicable diseases is required of every applicant before student teaching is begun. An academic average of 2.30 is required. It is recommended that each student have some summer experience with young children. Students teach in the University Nursery School and in those of nearby communities. (L. Brown, Stant, Yuill.)

C. Ed. 159. *Teaching Kindergarten*. (4-8)

First and second semesters. Fee, \$24 for students who do not pay the regular instructional materials fee. Admission to student teaching depends upon approval of the teaching staff of the Department. A doctor's certificate indicating freedom from communicable diseases is required of every applicant before student teaching is begun. An academic average of 2:30 is required. It is recommended that each student have some summer experience with young children. Students teach in the University Kindergarten and in those of nearby communities. (L. Brown, Stant, Yuill.)

C. Ed. 160. *Methods and Materials in Parent Education*. (2-3)

A survey of child development, child guidance, and related fields; a review of current

materials, books, periodicals, leaflets, films, skits; study of individual parent conferences, guided observation, discussion leading, role playing, preparing materials and programs for parent groups and television skits with laboratory practice through the group itself. (Staff.)

HOME ECONOMICS EDUCATION

For Advanced Undergraduates and Graduates

H. E. Ed. 102. Problems in Teaching Home Economics. (3)

First and second semesters. Prerequisite, H. E. Ed. 140. A study of the managerial aspects of teaching and administering a home-making program; the physical environment, organization, and sequence of instructional units, resource materials, evaluation, home projects. (Spencer.)

H. E. Ed. 120. Evaluation of Home Economics. (3)

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use. (Spencer.)

H. E. Ed. 140. Curriculum, Instruction, and Observation. (3)

The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observation in junior and senior high school home economics departments. (Spencer.)

H. E. Ed. 148. Teaching Vocational Home Economics in the Secondary Schools. (8)

First and second semesters. Prerequisite, H. E. Ed. 140 and 102 parallel. See Ed. 148 for additional requirements. Fee, \$24 for students who do not pay the regular instructional materials fee. Observation and supervised teaching in approved secondary school home economics departments in Maryland and the District of Columbia. (Spencer.)

H. E. Ed. 200. Seminar in Home Economics Education. (2)

(Spencer.)

H. E. Ed. 202. Trends in the Teaching and Supervision of Home Economics. (2-4)

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices. (Spencer.)

HUMAN DEVELOPMENT EDUCATION

The staff of the Institute for Child Study offers a series of courses on human development and approaches to the direct study of children for members of the educational profession. Certain prerequisites are set up within the course sequences but these prerequisites are modified by the student's previous experience in direct study of children; this is done in order to provide an interrelated series of experiences leading toward synthesis and the ability to apply the principles of human development and behavior.

Undergraduate courses are designed both for prospective teachers (H. D. Ed. 100-101) and in-service teachers (H. D. Ed. 102, 103, 104; H. D. Ed. 112-13, 114-15, 116-17.) The graduate offering contains two series. H. D. Ed. 200, 201, 202, 203 provide a basic core of four seminars for students majoring in the field, and also provide electives (beginning with H. D. Ed. 200—Introduction) for any graduate students interested in an overview of the field. The other seminars (H. D. Ed. 204 and above) are designed for emphasis in depth on the various areas of major processes and forces that shape the development and behavior of human beings, and are intended primarily for advanced graduate students. Along with most of the graduate seminars, H. D. Ed. 250 provides for concurrent application of scientific knowledge to the direct study of children as individuals and in groups.

For Advanced Undergraduates and Graduates

H. D. Ed. 100, 101. Principles of Human Development I and II. (3, 3)

H. D. Ed. 100 is prerequisite to H. D. Ed. 101. These courses give a general overview of the scientific principles that describe human development and behavior and relate these principles to the task of the school. A year-long study of an individual child is an integral part of the course and will require one half-day per week for observing children in nearby schools. *This course is designed to meet the usual certification requirements in Educational Psychology.*

H. D. Ed. 102, 103, 104. Child Development Laboratory I, II, and III. (2, 2, 2)

These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual, presents the accumulating data from time to time to the study group for criticism and group analysis and writes an interpretation of the dynamics underlying the child's learning, behavior and development. Provides opportunity for teachers in-service to earn credit for participation in their own local child study group.

H. D. Ed. 112, 114, 116. Scientific Concepts in Human Development I, II, III. (3, 3, 3)

Summer session.

H. D. Ed. 113, 115, 117. Laboratory in Behavior Analysis I, II, III. (3, 3, 3)

Summer session.

For Graduates

H. D. Ed. 200. Introduction to Human Development and Child Study. (3)

Offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week for this purpose. It is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study. When offered during the summer intensive laboratory work with case records may be substituted for the study of an individual child.

H. D. Ed. 201. Biological Bases of Behavior. (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 201 or concurrently. Emphasizes that understanding human life, growth, and behavior depends on understanding the ways in which the body is able to capture, control, and expand energy. Application throughout is made to human body processes and implications for understanding and working with people.

H. D. Ed. 202. Social Bases of Behavior. (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 202 or concurrently. Analyzes the socially inherited and transmitted patterns of pressures, expectations, and limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group.

H. D. Ed. 203. Integrative Bases of Behavior. (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent, H. D. Ed. 201 and H. D. Ed. 202 are prerequisite. Analyzes the organized and integrated patterns of feeling, thinking and behaving which emerge from the interaction of basic biological drives and potentials with one's unique experience growing up in a social group.

H. D. Ed. 204, 205. Physical Processes in Human Development. (3, 3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. Describes in some detail the major organic processes of: conception, biological inheritance; differentiation and growth of the body; capture, transportation and use of energy; perception of the environment; coordination and integration of function; adaptation to unusual demands and to frustration; normal individual variation in each of the above processes.

H. D. Ed. 206, 207. Socialization Processes in Human Development I, II. (3, 3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. Analyzes the processes by which human beings internalize the culture of the society in which they live. The major sub-cultures in the United States, their training procedures, and their characteristic human expressions in folk-knowledge, habits, attitudes, values, life-goals, and adjustment patterns are analyzed. Other cultures are examined to highlight the American way of life and to reveal its strengths and weaknesses.

H. D. Ed. 208, 209. Self Processes in Human Development I and II. (3, 3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. Analyzes the effects of the various physical and growth processes, affectional relationships, socialization processes, and peer group roles and status on the integration, development, adjustment, and realization of the individual self. This analysis includes consideration of the nature of intelligence and of the learning process; the development of skills, concepts, generalizations, symbolizations, reasoning and imagination, attitudes, values, goals and purposes; and the conditions, relationships and experiences that are essential to full human development. The more common adjustment problems experienced in our society at various maturity levels, and the adjustment mechanisms used to meet them are studied.

Human Development Education

H. D. Ed. 210. Affectional Relationships and Processes in Human Development. (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before or concurrently. Describes the normal development, expression and influence of love in infancy, childhood, adolescence and adulthood. It deals with the influence of parent-child relationship involving normal acceptance, neglect, rejection, inconsistency, and over-protection upon health, learning, emotional behavior and personality adjustment and development.

H. D. Ed. 211. Peer-culture and Group Processes in Human Development. (3)

H. D. Ed. a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before or concurrently. Analyzes the processes of group formation, role-taking and status-winning. It describes the emergence of the "peer-culture" during childhood and the evolution of the child society at different maturity levels to adulthood. It analyzes the developmental tasks and adjustment problems associated with winning belonging and playing roles in the peer group.

H. D. Ed. 212, 214, 216. Advanced Scientific Concepts in Human Development I, II, III. (3, 3, 3)

Summer session.

H. D. Ed. 213, 215, 217. Advanced Laboratory in Behavior Analysis I, II, III. (3, 3, 3)

Summer session.

H. D. Ed. 218. Workshop in Human Development. (6)

Summer session. Prerequisites, H. D. Ed. 212, 213, 214, 215, 216, 217.

H. D. Ed. 219. Psycho-Social Development of Exceptional Children. (3)

Studies intensively the psychology of exceptional children with stress upon the inter relationship among the psychological, physical, and social development of these children.

H. D. Ed. 220. Developmental Tasks. (3)

H. D. 200 or its equivalent, H. D. Ed. 201, and H. D. 202 are prerequisites. Describes the series of developmental tasks faced by children. These tasks, made necessary by the normal process of growth and development, are learnings that the child needs and desires to accomplish because of emerging capacities for action and relationship, because of the demands and expectancies of his family and of society, and because of the progressive clarification and the directive powers of his own interests, attitudes, values and aspirations. Emphasis will be placed on the use of developmental tasks concepts in educational planning and practice.

H. D. Ed. 221. Learning Theory and the Educative Process. (3)

Prerequisites, H. D. Ed. 100 and 101 or equivalent. Provides a systematic review of the major theories of learning and their impact on education. Considers factors that influence learning.

H. D. Ed. 230, 231. Field Program in Child Study I and II. (2-6)

Prerequisite, consent of instructor. Offers apprenticeship training preparing properly

qualified persons to become staff members in human development workshops, consultants to child study field programs and coordinators of municipal or regional child study programs for teachers or parents. Extensive field experience is provided. In general this training is open only to persons who have passed their preliminary examinations for the doctorate with a major in human development or psychology.

H. D. Ed. 250a, 250b, 250c. Direct Study of Children. (1, 1, 1)

May not be taken concurrently with H. D. Ed. 102, 103, 104, or 200. Provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in human development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in human development may use records from their own classrooms for this course.

H. D. Ed. 260. Synthesis of Human Development Concepts. (3)

Prerequisites, H. D. Ed. 204, 206 and 208. A seminar wherein advanced students work toward a personal synthesis of their own concepts in human growth and development. Emphasis is placed on seeing the dynamic interrelations between all processes in the behavior and development of an individual.

H. D. Ed. 270. Seminars in Special Topics in Human Development. (2-6)

Prerequisite, consent of the instructor. An opportunity for advanced students to focus in depth on topics of special interest growing out of their basic courses in human development.

INDUSTRIAL EDUCATION

Ind. Ed. 1. Mechanical Drawing. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters.

Ind. Ed. 2.—Elementary Woodworking. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. This is a woodworking course which involves primarily the use of hand tools. The course is developed so that the student uses practically every common woodworking hand tool in one or more situations. There is also included elementary wood finishing, the specifying and storing of lumber, and the care and conditioning of tools used.

Ind. Ed. 9. Industrial Arts in the Elementary School I. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. A course for pre-service and in-service elementary school teachers covering construction activities in a variety of media suitable for classroom use. The work is organized on the unit basis so that the construction aspect is supplemented by reading and other investigative procedures.

Ind. Ed. 10. Industrial Arts in the Elementary School II. (2)

Prerequisite, Ind. Ed. 9. This is a continuation of Ind. Ed. 9. Two laboratory periods a week. Laboratory fee, \$5.00. It provides the teacher with opportunities to develop

Industrial Education

further competence in construction activities. Some of the basic phenomena of industry are studied, particularly those which apply to the manufacture of common products, housing, transportation and communication.

Ind. Ed. 12. Shop Calculations. (3)

Shop Calculations is designed to develop an understanding and working knowledge of the mathematical concepts related to the various aspects of industrial education. The course includes phases of algebra, geometry, trigonometry, and general mathematics as applied to shop and drawing activities.

Ind. Ed. 21. Mechanical Drawing. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1. Laboratory fee, \$5.00. A course dealing with working drawings, machine design, pattern layouts, tracing and reproduction. Detail drawings followed by assemblies are presented.

Ind. Ed. 22. Machine Woodworking I. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 2. Laboratory fee, \$5.00. Machine Woodworking I offers initial instruction in the proper operation of the jointer, band saw, variety saw, jig saw, mortiser, shaper, and lathe. The types of jobs which may be performed on each machine and their safe operation are of primary concern.

Ind. Ed. 23. Arc and Gas Welding. (1)

One laboratory period a week. Laboratory fee, \$5.00. A course designed to develop a functional knowledge of the principles and use of electric and acetylene welding. Practical work is carried on in the construction of various projects using welded joints. Instruction is given in the use and care of equipment, types of welded joints, methods of welding, importance of welding processes in industry, safety considerations, etc.

Ind. Ed. 24. Sheet Metal Work. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. Articles are made from metal in its sheet form and involve the operations of cutting, shaping, soldering, riveting, wiring, folding, seaming, beading, burring, etc. The student is required to develop his own patterns inclusive of parallel line development, radial line development, and triangulation.

Ind. Ed. 26. General Metal Work. (3)

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. This course provides experiences in constructing items from aluminum, brass, copper, pewter, and steel. The processes included are designing, lay out, heat treating, forming, surface decorating, fastening, and assembling. The course also includes a study of the aluminum, copper, and steel industries in terms of their basic manufacturing processes.

Ind. Ed. 28. Electricity I. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio.

Ind. Ed. 31. Mechanical Drawing. (2)

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and 21. Laboratory fee, \$5.00. A course dealing with the topics enumerated in Ind. Ed. 21 but on a more advanced basis. The reading of prints representative of a variety of industries is a part of this course.

Ind. Ed. 33. Automotives I. (3)

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. Automotives I is a study of the fundamentals of internal combustion engines as applied to transportation. A study of basic materials and methods used in the automotive industry is included. Shop practices are built around the maintenance and minor repair of automobiles and smaller motor driven apparatus.

Ind. Ed. 34. Graphic Arts I. (3)

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. An introductory course involving experiences in letterpress and offset printing practices. This course includes typographical design, hand composition, proof reading, stock preparation, offset plate making, imposition, lock-up, stock preparation, presswork, linoleum block cutting, paper marbelizing, and bookbinding.

Ind. Ed. 41. Architectural Drawing. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$5.00. Practical experience is provided in the design and planning of houses and other buildings. Working drawings, specifications, and blue-prints are featured.

Ind. Ed. 42. Machine Woodworking II. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 22, or equivalent. Laboratory fee, \$5.00. Advanced production methods with emphasis on cabinetmaking and design.

Ind. Ed. 43. Automotives II. (3)

Three two-hour laboratory periods a week. Prerequisite, Ind. Ed. 33. Laboratory fee, \$7.50. This is an advanced course in automobile construction and maintenance covering the engine, fuel system, ignition system, chassis, and power train. Shop practices are built around the major repair and adjustment of the above groups.

Ind. Ed. 44. Graphic Arts II. (3)

Three two-hour laboratory periods a week. Prerequisite, Ind. Ed. 34. Laboratory fee, \$7.50. An advanced course designed to provide further experiences in letterpress and offset printing and to introduce other reproduction processes. Silk screen printing, dry point etching, mimeograph reproduction, and rubber stamp making are the new processes introduced in this course.

Ind. Ed. 48. Electricity II. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. Principles involved in a-c and d-c electrical equipment, including heating measurements, motors and controls, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics.

Ind. Ed. 50. Methods of Teaching. (2)

(Offered at University College Centers.) For vocational and occupational teachers of shop work and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; measuring results and grading student progress in shop and related technical subjects.

Ind. Ed. 60. Observation and Demonstration Teaching. (2)

(Offered in Baltimore.) Prerequisite, Educational Psychology and/or Methods of

Industrial Education

Teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and criticisms constitute the remainder of scheduled activities in this course.

Ind. Ed. 66. Art Metal Work. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 26, or equivalent. Laboratory fee, \$5.00. Advanced practicum. It includes methods of bowl raising and bowl ornamenting.

Ind. Ed. 69. Machine Shop Practice I. (3)

Two three-hour laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$7.50. Bench work, turning, planing, milling, and drilling. Related technical information.

Ind. Ed. 89. Machine Shop Practice II. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 69, or equivalent. Laboratory fee, \$5.00. Advanced shop practicum in thread cutting, grinding, boring, reaming, and gear cutting. Work-production methods are employed.

Ind. Ed. 94. Shop Maintenance. (2)

Prerequisite, 8 semester hours of shop credit, or equivalent. Skill developing practice in the maintenance of school-shop facilities.

Ind. Ed. 101. Operational Drawing. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$5.00. A comprehensive course designed to give students practice in the modern drafting methods of industry.

Ind. Ed. 102. Advanced Woodfinishing and Upholstery. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 22, or equivalent. Laboratory fee, \$5.00. This course offers instruction in wood finishing techniques applicable to furniture restoration and in the processes of upholstering furniture.

Ind. Ed. 104. Advanced Practices in Sheet Metal Work. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 24, or equivalent. Laboratory fee, \$5.00. Study of the more complicated processes involved in commercial items. Calculations and pattern making are emphasized.

Ind. Ed. 105. General Shop. (2)

Laboratory fee, \$5.00. Designed to meet needs in organizing and administering a secondary school general shop. Students are rotated through skill and knowledge developing activities in a variety of shop areas.

Ind. Ed. 106. Art Metal Work. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. Basic operations in the art of making jewelry including ring making and stone setting.

Ind. Ed. 108. Electricity III. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 28, or equivalent. Laboratory fee, \$5.00. Experimental development of apparatus and equipment for teaching the principles of electricity.

Ind. Ed. 109. Experimental Electricity and Electronics—A, B, C, D. (2, 2, 2, 2)
(Offered in Baltimore.)

Ind. Ed. 110. Foundry. (1)

One laboratory period a week. Laboratory fee, \$5.00. Bench and floor molding and elementary core making. Theory and principles covering foundry materials, tools, and appliances.

Ind. Ed. 111. Laboratory Practicum in Industrial Arts Education. (3)

Three two-hour laboratory periods a week. Prerequisite, eighteen semester hours of shopwork and drawing. Laboratory fee, \$7.50. A course devoted to the development of instructional materials and the refinement of instructional methods pertinent to the teaching of industrial arts at the secondary school level.

Ind. Ed. 124 a, b. Organized and Supervised Work Experience.

(3 credits for each internship period, total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry." The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him in regard to the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internships are required. The two internships may be served with the same business or industry. The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes. More complete details are found in the handbook prepared for the student of this curriculum.

Ind. Ed. 140 (Ed. 140). Curriculum, Instruction, and Observation. (3)

Major functions and specific contributions of industrial art education; its relation to the general objectives of the junior and senior high schools, selection and organization of subject matter in terms of modern practices and needs; methods of instruction; expected outcomes; measuring results; professional standards. Twenty periods of observation.

Ind. Ed. 143. Industrial Safety Education I. (2)

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

Ind. Ed. 144. Industrial Safety Education II. (2)

In this course exemplary safety practices are studied through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

Ind. Ed. 148. Student Teaching in Secondary Schools. (2-8)

First and second semesters. See Ed. 148 for additional requirements. Fee, \$24 for students who do not pay the regular instructional materials fee.

Ind. Ed. 150. Training Aids Development. (3)

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such devices will be required.

Ind. Ed. 157. Tests and Measurements. (2)

Prerequisite, Ed. 150 or consent of instructor. The construction of objective tests for occupational and vocational subjects.

Ind. Ed. 160. Essentials of Design. (2)

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and basic shop work. Laboratory fee, \$5.00. A study of the basic principles of design and practice in their application to the construction of shop projects.

Ind. Ed. 161. Principles of Vocational Guidance. (2)

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

Ind. Ed. 164. Shop Organization and Management. (2)

This course covers the basic elements of organizing and managing an industrial education program including the selection of equipment and the arrangement of the shop.

Ind. Ed. 165. Modern Industry. (3)

This course provides an overview of manufacturing industry in the American social, economic, and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like.

Ind. Ed. 166. Educational Foundations of Industrial Arts. (2)

A study of the factors which place industrial arts education in any well-rounded program of general education.

Ind. Ed. 167. Problems in Occupational Education. (2)

The purpose of this course is to secure, assemble, organize, and interpret data relative to the scope, character, and effectiveness of occupational education.

Ind. Ed. 168. Trade or Occupational Analysis. (2)

This course should precede Ind. Ed. 169. Provides a working knowledge of occupational and job analysis which is basic in organizing vocational-industrial courses of study.

Ind. Ed. 169. Course Construction. (2)

Surveys and applies techniques of building and reorganizing courses of study for effective use in vocational and occupational schools.

Ind. Ed. 170. Principles of Vocational Education. (2)

The course develops the vocational education movement as an integral phase of the American program of public education.

Ind. Ed. 171. History of Vocational Education. (2)

An overview of the development of vocational education from primitive times to the present.

Ind. Ed. 175. Recent Technological Developments in Products and Processes. (3)

This course is designed to give the student an understanding of recent technological developments as they pertain to the products and processes of industry. The nature of the newer products and processes is studied as well as their effect upon modern industry and/or society.

For Graduates

Ind. Ed. 207. Philosophy of Industrial Arts Education. (3)

This course is intended to assist the student in his development of a point of view in regard to industrial arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

Ind. Ed. 214. School Shop Planning and Equipment Selection. (3)

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

Ind. Ed. 216. Supervision of Industrial Arts. (2)

Ind. Ed. 220. Organization, Administration and Supervision of Vocational Education. (2)

This course surveys objectively the organization, administration, supervision, curricular spread and viewpoint, and the present status of vocational education.

Ind. Ed. 240. Research in Industrial Arts and Vocational Education. (2)

This is a course offered by arrangement for persons who are conducting research in the areas of industrial arts and vocational education.

Ind. Ed. 241. Content and Method of Industrial Arts. (3)

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for industrial arts instruction are studied and practiced.

Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education. (2)

MUSIC EDUCATION

For Advanced Undergraduates and Graduates

Mus. Ed. 125. Creative Activities in the Elementary School. (2)

Prerequisite, Music 16 or consent of instructor. A study of the creative approach to singing, listening, playing, rhythmic activity, and composition. These topics are studied in correlation with other areas and creative programs. (Staff.)

Mus. Ed. 128. Music for the Elementary Classroom Teacher. (2-3)

Prerequisite, Music 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid both music specialists and classroom teachers. It includes an outline of objectives and a survey of instructional methods. (Grentzer, Henke.)

Mus. Ed. 129. Methods of Class Instrumental Instruction. (2)

Two one-hour laboratories and one lecture per week. Prerequisites, or concurrent registration in Music 80, 81. Organization of and techniques for teaching beginning instrumental classes in the public schools. (Berman.)

Mus. Ed. 132. Music in the Secondary School. (2-3)

Prerequisite, consent of instructor. A study of the vocal and instrumental programs in the secondary schools. A survey of the needs in general music and the relationship of music to the core curriculum. (Henke.)

Mus. Ed. 139. Music for the Elementary School Specialist. (2)

First semester. Prerequisite, consent of instructor. A survey of instructional materials; objectives; organization of subject matter; lesson planning; methods and procedures in singing, listening, rhythms, simple instruments, and creative activities for the music specialist in the elementary school. (Henke.)

Mus. Ed. 155. Organization and Technique of Instrumental Class Instruction. (2)

Prerequisite, consent of instructor. Practical instruction in the methods of tone production, tuning, fingering, and in the care of woodwind and brass instruments. A survey of the materials and published methods for class instruction. (Henderson.)

Mus. Ed. 163. Band Techniques and Administration. (2)

Prerequisites, Music 81 and 161. Two lectures and two laboratory hours per week. Intensive study of a secondary wind instrument and of rehearsal techniques. A survey of instructional materials, administrative procedures, and band pageantry will be included.

Mus. Ed. 170. Methods and Materials for Class Piano Instruction. (2)

The study of the principles and techniques of teaching class piano. The following groups, beginning and advanced, will be used for demonstrations; elementary school children, junior and senior high school students, adults. Special emphasis will be placed on the analysis of materials.

Mus. Ed. 171. String Teaching in the Public Schools. (2)

A study of the problems of organizing and developing the string program in the public schools. Emphasis is placed on exploratory work in string instruments, on the study of teaching techniques, and on the analysis of music literature for solo, small ensembles, and orchestra. (Berman.)

Mus. Ed. 173. The Vocal Music Teacher and School Organization. (2)

Prerequisite, practice teaching or teaching experience. Study of the function of the vocal music teacher in the elementary and secondary schools. Students will serve as resource teachers for those enrolled in Mus. Ed. 139. Open to graduate students by permission of instructor. (Grentzer.)

Mus. Ed. 175. Methods and Materials in Vocal Music for the High School. (2)

Prerequisite, consent of instructor. A survey of suitable vocal and choral repertoire for the high school. Problems of diction, interpretation, tone production, and phrasing. The course is designed primarily for choral directors and teachers of voice classes. (Grentzer.)

Mus. Ed. 180. Instrumental Seminar. (2)

Prerequisite, consent of instructor. Problems in the music directing of public-school instrumental organizations. A study of representative orchestral, band, and small-ensemble scores, and of the teaching problems involved. (Jordan.)

For Graduates

Mus. Ed. 200. Research Methods in Music and Music Education. (3)

The application of methods of research to problems in the fields of music and music education. The preparation of bibliographies and the written exposition of research projects in the area of the student's major interest. (Grentzer.)

Mus. Ed. 201. Administration and Supervision of Music in the Public Schools. (3)

The study of basic principles and practices of supervision and administration with emphasis on curriculum construction, scheduling, budgets, directing of in-service teaching, personnel problems, and school-community relationships. (Grentzer.)

Mus. Ed. 204. Current Trends in Music Education (Seminar). (2)

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels. (Grentzer.)

Mus. Ed. 205. Seminar in Vocal Music in the Elementary Schools. (2)

A comparative analysis of current methods and materials used in the elementary schools. A study of the music curriculum as a part of the total school program, and of the roles of the classroom, teacher and the music specialist. (Grentzer.)

Mus. Ed. 206. Choral Conducting and Repertoire. (2)

The study and reading of choral literature of all periods, including the contemporary, suitable for use in school and community choruses. Style, interpretation, tone quality, diction, rehearsal and conducting techniques are analyzed. (Staff.)

Mus. Ed. 207. Seminar in Vocal Music in the Secondary Schools. (2)

A comparative analysis of current methods and materials used in teaching junior and senior high-school classes in general music, history and appreciation, theory, and voice; and in directing choral groups and community singing. (Grentzer.)

Mus. Ed. 208. The Teaching of Music Appreciation. (2)

A study of the objectives for the elementary and secondary levels, the techniques of directed listening, the presentation of theoretical and biological materials, course planning, selection and use of audio-visual aids, and library materials, and the correlation between music and other arts. (Ulrich.)

Science Education, Special Education

Mus. Ed. 209. Seminar in Instrumental Music. (2)

A consideration of acoustical properties and basic techniques of the instruments. Problems of ensemble and balance, intonation, precision, and interpretation are studied. Materials and musical literature for orchestras, bands, and small ensembles are evaluated. (Jordan.)

Mus. Ed. 210. Advanced Orchestration and Band Arranging. (Seminar) (2)

Prerequisite, Music 147 or the equivalent, or consent of the instructor. A study of arranging and transcription procedures in scoring for the orchestra and band. Special attention is given to the arranging problems of the instrumental director in the public schools. (Henderson.)

SCIENCE EDUCATION

**Sci. Ed. 6. The Natural Sciences in the Elementary School. (2)*

Laboratory fee, \$2.00. Selecting, organizing, and teaching materials in the plant and animal world. For the elementary school teacher who needs help in identifying and making effective use of living materials brought to the classroom, assisting pupils to find answers to their questions, and planning other worthwhile science experiences. Extensive background in the subject matter of the biological sciences not required. (Blough.)

**Sci. Ed. 7. The Physical Sciences in the Elementary School. (2)*

Laboratory fee, \$2.00. Similar to the previous course except that problems for study are selected from the various fields of the physical sciences such as electricity and magnetism, weather, heat, light, sound, etc. Non-technical, comprehensive treatment intended to give background in subject matter and methods to equip teachers for elementary school science teaching. (Blough.)

Note: Sci. Ed. 6 and 7 replace Sci. Ed. 1, 2, 3, 4. Laboratory fees have been combined, making \$2.00 for each of the two courses instead of \$1.00 for each of the four courses.

Sci. Ed. 105. Science in the Elementary Schools. (2-3)

Laboratory fee, \$2.00. Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis is on content and method related to science units in common use in elementary schools. (Blough.)

Ed. 247. Seminar in Science Education. (2)

(See page 48.)

SPECIAL EDUCATION

For Advanced Undergraduates and Graduates

Sp. Ed. 170. Introduction to Special Education. (3)

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures. (Hebeler.)

*Students who have received four credits in Sci. Ed. 1, 2, 3 and 4 should not register for these courses.

Sp. Ed. 171. Characteristics of Exceptional Children. (3-6)

A. Mentally Retarded. B. Gifted.

Studies the diagnosis, etiology, physical, social, and emotional characteristics of exceptional children. Describes how the educational program should be modified to utilize the full capacity of these children. (Hebeler.)

Sp. Ed. 172. Education of Exceptional Children. (3-6)

A. Mentally Retarded. B. Gifted.

Prerequisite, Sp. Ed. 171 or equivalent. Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Hebeler.)

Sp. Ed. 173. Curriculum for Exceptional Children. (3-6)

A. Mentally Retarded. B. Gifted.

Prerequisite, Sp. Ed. 171 or equivalent. Examines the principles and objectives guiding curriculum for exceptional children; gives experience in developing curriculum for these children; studies various curricula currently in use. (Hebeler.)

For Graduates

Sp. Ed. 278. Seminar in Special Education. (2)

An overview of education of exceptional children.

(Hebeler.)

Note: For courses in physical education and health education, see the catalog of the College of Physical Education, Recreation, and Health.

FACULTY

1961-1962

COLLEGE OF EDUCATION

- GRACE L. ADAMS, *Assistant Professor of Education, Institute for Child Study*
B.S., University of Southern California, 1940; M.S., 1956.
- J. PAUL ANDERSON, *Assistant Professor of Education*
B.S., University of Minnesota, 1942; M.A., 1947; PH.D., 1960.
- VERNON E. ANDERSON, *Professor of Education and Dean of the College of Education*
B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.
- FRANK B. BAKER, *Assistant Professor of Education and Assistant Director, University Counseling Center*
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- CALVIN A. BLATT, *Graduate Assistant in Education*
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- LUCILE BOWIE, *Associate Professor of Education, Institute for Child Study.*
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- RICHARD M. BRANDT, *Associate Professor of Education, Institute for Child Study*
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- ELEANOR A. BROOME, *Instructor in Childhood Education*
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- DALE W. BROWN, *Assistant Professor of Education*
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- CHUNG-PHING SHIM, *Graduate Assistant in Education*
B.A., Phillipine Union College, 1956; M.A., Pacific Union College, 1958.
- JACK SIMICH, *Graduate Assistant in Industrial Education*
B.S., Northern Illinois State Teachers College, DeKalb, Illinois, 1953; M.A., 1959.
- JOSEPH P. SOLLARS, *Graduate Assistant in Education*
B.S., Frostburg State Teachers College, 1942; M.A., West Virginia University, 1946.
- MABEL S. SPENCER, *Associate Professor of Home Economics Education*
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- MARGARET A. STANT, *Assistant Professor of Childhood Education*
B.S., University of Maryland, 1952; M.ED., 1955; A.P.C., George Washington University, 1959.
- LINCOLN H. STEIGERWALT, *Fellow in Education*
B.S., University of Maryland, 1957.
- CHARLES STEWART, *Lecturer in Education*
A.B., Erskine College, 1915; M.A., University of Maryland, 1951.
- WENDALL L. SWANSON, *Graduate Fellow in Education*
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- FRED R. THOMPSON, *Professor of Education, Institute for Child Study*
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- WILLIAM P. TIERNEY, *Associate Professor of Industrial Education*
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- VERNON A. TRYON, *Fellow in Education*
B.S., State University of New York, Oswego, New York, 1958.
- ORVAL L. ULRY, *Associate Professor of Education and Director of the Summer School*
B.S., Ohio State University, 1938; M.A., 1944; PH.D., 1953.
- JAMES A. VAN ZWOLL, *Professor of School Administration*
B.A., Calvin College, Grand Rapids, Michigan, 1933; M.A., University of Michigan, 1937; PH.D., 1942.
- WALTER B. WAETJEN, *Professor of Education, Institute for Child Study*
B.S., State Teachers College, Millersville, Pennsylvania, 1942; M.S., University of Pennsylvania, 1947; ED.D., University of Maryland, 1951.
- ANN C. WAGGONER, *Graduate Assistant in Education*
B.S., Duke University, 1948.

- HENRY WALBESSER**, *Graduate Assistant in Education*
B.S., State University of New York, 1958.
- KATHRYN WALKER**, *Coordinator of University Credential Service*
- GEORGE M. WELLER**, *Grant Foundation Fellow, Institute for Child Study*
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- GLADYS A. WIGGIN**, *Professor of Education.*
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- LOUISE D. YUILL**, *Instructor in Childhood Education*
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- JOEL H. BERMAN**, *Assistant Professor of Music*
JAMES G. BROWN, *Instructor in Office Techniques and Management*
V. R. CARDOZIER, *Professor and Head of Agricultural and Extension Education*
HELEN CLARKE, *Dean of Women*
MARY F. DE VERMOND, *Instructor in Music*
ROSE MARIE GRENTZER, *Professor of Music*
HUBERT P. HENDERSON, *Assistant Professor of Music*
H. BRYCE JORDAN, *Associate Professor of Music*
JOHN LEMBACH, *Associate Professor of Art*
ROBERT MC CLINTOCK, *Director of Institutional Research*
JAMES H. MIERS, *Lecturer in Physics (Part-time)*
JANE O'NEILL, *Instructor in Office Techniques and Management*
PHILIP ROVNER, *Instructor in Foreign Languages*
CLODUS R. SMITH, *Assistant Professor of Agricultural and Extension Education*

OFF-CAMPUS SPONSORING ADMINISTRATORS AND SUPERVISORS (INTERNSHIP PROGRAM), 1959-60

- MARCELL BERNSTEIN**, *Principal, Lone Oak Elementary School, Montgomery County*
THOMAS BILEK, *Supervisor of Secondary Schools, Montgomery County*
HELEN JOHNSON, *Supervisor of In-Service Education, Montgomery County*
LILLIAN KLEIN, *Supervisor of Elementary Schools, Montgomery County*
WILLIAM W. MILES, *Principal, Sherwood Sr.-Jr. High School, Montgomery County*

OFF-CAMPUS SUPERVISING TEACHERS, 1959-1960

EDYTHE G. ADAMS, Silver Spring Intermediate School, Montgomery County
MAY L. ALDER, Lewisdale Elementary School, Prince George's County
BENJAMIN W. ALLNUTT, Bethesda-Chevy Chase Senior High School, Montgomery County
MAURICE L. ALLISON, Bladensburg Junior High School, Prince George's County
CHARLES G. ANDERSON, Rollingcrest Junior High School, Prince George's County
HELEN P. ANDERSON, Bladensburg Senior High School, Prince George's County
JENNIE G. AZHDERIAN, Wheaton High School, Montgomery County
WILLIAM G. BAGNALL, Montgomery Blair High School, Montgomery County
FRANCIES K. BALDWIN, Buck Lodge High School, Prince George's County
SARAH L. BALL, Montgomery Elementary Traveling Music School, Montgomery County
BARBARA ANNE BALLIF, Radnor Elementary School, Montgomery County
INEZ W. BARGER, Thomas S. Stone School, Prince George's County
HELEN V. BARTHOLOW, Hamilton Junior High School, Baltimore City
CECELIA L. BASS, Garrison Blvd. School No. 42, Baltimore City
ELEANOR F. BAUDINO, Kensington Junior High School, Montgomery County
RUTH H. BAUER, Northwestern High School, Prince George's County
JOAN S. BAXTER, Four Corners Elementary School, Montgomery County
THOMAS E. BEATTY, Bladensburg High School, Prince George's County
MARGARET C. BEDSWORTH, Montgomery Hills Junior High School, Montgomery County
ALICE T. BEHLMER, Towson High School, Baltimore County
ELIZABETH N. BELKIN, Lone Oak Elementary School, Montgomery County
DONALD J. BELL, Sligo Junior High School, Montgomery County
ROXIE F. BETTERTON, Four Corners Elementary School, Montgomery County
ELEANOR K. BINGHAM, Bethesda-Chevy Chase High School, Montgomery County
CHARLES D. BLACK, Buck Lodge Junior High School, Prince George's County
WINONA MILLS BLACKBURN, Bladensburg Junior High School, Prince George's County
SAMUEL M. BOHINCE, Takoma Park Junior High School, Montgomery County
ANGELINE G. BOISEN, Woodlin Elementary School, Montgomery County
EDYTHE W. BOLTON, University Park Elementary School, Prince George's County
WALTER BOROWETZ, Greenbelt Junior High School, Prince George's County
GLADYS T. BOWMAN, Broome Junior High School, Montgomery County
ALICE M. BOYD,, Broad Acres Elementary School, Montgomery County
DOROTHY W. BRETHOUWER, Westbrook Elementary School, Montgomery County
ROBERT L. BREWRINK, High Point High School, Prince George's County
CLARA L. BRICKER, Northwestern Senior High School, Prince George's County
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NAN W. BROWN, Laurel Junior High School, Prince George's County
JOSEPH D. BRYAN, Buck Lodge Junior High School, Prince George's County
CHARLES R. BRYANT, Bethesda-Chevy Chase High School, Montgomery County
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JULIA S. BUDDINGTON, Berwyn Elementary School, Prince George's County
WILMA B. BUNN, Parkwood Elementary School, Montgomery County
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ELIZABETH E. BURSLEM, Hyattsville Elementary School Prince George's County
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MERRY S. CANAVAN, Langley Park Elementary School, Prince George's County

MAY G. CARLSON, Brookview Elementary School, Montgomery County
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 FLORENCE G. CROSSAN, Stephen Knolls Elementary School, Montgomery County
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 MARGARET ANN DRENNAN, Montgomery Blair High School, Montgomery County
 MARGARET DUFF, Parkway Elementary School, Prince George's County
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 WALTER E. FEDORA, Suitland High School, Prince George's County
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WILLIAM H. HARRIS, JR., Northwestern Senior High School, Prince George's County
GLENICE HARSTAD, Glenridge Junior High School, Prince George's County
GAYLE B. HASSID, Milford Mill High School, Baltimore County
MYNA LEE HELTSLEY, Eastern Junior High School, Montgomery County
ELEANOR J. HENDERSON, North Bethesda Junior High School, Montgomery County
ROGENE R. HIGGINS, Lewisdale Elementary School, Prince George's County
M. DENE HOFFMAN, Bladensburg Senior High School, Prince George's County
RUTH K. HOLSTEIN, Silver Spring Nursery School, Montgomery County
BELVA H. HOPKINS, High Point High School, Prince George's County
REX L. HOWARD, Northwood High School, Montgomery County
THERESA C. HOWARD, Mount Rainier Junior High School, Prince George's County
KENNETH E. HUFF, Takoma Park Junior High School, Montgomery County
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DWIGHT M. HURLEY, Buck Lodge Junior High School, Prince George's County
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COLLEGE of ENGINEERING

Catalog Series 1961-1962



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VOLUME 16

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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26-1 Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
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<i>Chairman</i>	1966
McCormick and Company, 414 Light Street, Baltimore 2	
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<i>Vice-Chairman</i>	1968
Farmers Home Administration, 103 South Gay Street, Baltimore 2	
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<i>Secretary</i>	1967
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HARRY H. NUTTLE	
<i>Treasurer</i>	1966
Denton	
LOUIS L. KAPLAN	
<i>Assistant Secretary</i>	1961
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C. E. TUTTLE	
<i>Assistant Treasurer</i>	1962
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Commercial Credit Building, Baltimore	
THOMAS W. PANGBORN	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
WILLIAM C. WALSH	1968
Liberty Trust Building, Cumberland	
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4101 Greenway, Baltimore 18	

Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

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B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;
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B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

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B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D.,
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B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

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B.S., University of Maryland, 1942; PH.D., 1952.

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College, 1938; D.SC., Western Maryland College, 1938.

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B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

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D.D.S., University of Maryland, 1922.

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B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse Uni-
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Dr. Peter P. Lejins (Arts and Sciences), *Chairman*

COMMITTEE ON APPOINTMENTS, PROMOTIONS, AND SALARIES

Dr. Robert L. Green (Agriculture), *Chairman*

COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. G. Kenneth Reiblich (Law), *Chairman*

COMMITTEE ON COUNSELING OF STUDENTS

Dr. Harold F. Sylvester (Business and Public Administration), *Chairman*

COMMITTEE ON THE FUTURE OF THE UNIVERSITY

Dr. Augustus J. Prahl (Graduate School), *Chairman*

THE COLLEGE

FOUR-YEAR PROGRAMS OUTLINED IN THIS CATALOG LEAD TO THE DEGREE of Bachelor of Science and Bachelor of Science with curriculum designation in aeronautical engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering, and fire protection. The engineering programs integrate these elements: (1) *basic sciences* including mathematics, physics, chemistry; (2) *engineering sciences* including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism . . . ; (3) *professional studies* in aeronautical, chemical, civil, electrical or mechanical engineering; (4) *liberal arts and social studies* in the American Civilization Program; and (5) certain other required subjects including air science and physical activities.

Each program lays a broad base for *continued learning* after college in professional practice, in business or industry, in public service, or in graduate study and research. Representative work that engineering graduates do is suggested in the following paragraphs.

The aeronautical engineer deals with problems related to transporting people and things by air and through space. Aerodynamics, thermodynamics, and the mechanics of fluids and solids are among his basic sciences. He may apply them in some phase of planning or producing airplanes, missiles, or rockets, or in devising means to sustain and control their flight.

The chemical engineer applies chemistry to development and economic production of industrial chemicals, fuels, modern synthesis and certain alloys. He also applies mechanics, thermodynamics, reaction kinetics and aspects of nuclear science to unit operations and processes which are fundamental in the design and operation of industries in which material undergoes a change in its identity. He serves as a research worker, operator, manager, executive or consultant.

The civil engineer is primarily a planner, a designer, a builder, and a manager of public works and private enterprise. His professional service plays a major role in designing, supervising construction, or managing virtually every large building, bridge, dam, highway, railway, airport, water supply, waste disposal system, city plan, industrial plant, public works project.

The electrical engineer puts mathematics and the physical sciences to practical use in designing systems that generate, transmit, and distribute electrical energy; to transmit and receive "intelligence," as for example by telephone radio, radar, television and computers; and to regulate and control mechanical and industrial processes by electronics and servomechanisms.

The mechanical engineer figures ways to transmit power economically by heat or by mechanical systems. He applies the mechanics of fluids and solids, thermodynamics, and an understanding of the behavior of engineering materials under different conditions. As a professional engineer he devises processes for industrial production. As an industrial agent he serves as a supervisor, manager, or sales representative.

General Information

The specialist in fire protection is concerned with scientific, technical, and supervisory problems involved in safeguarding life and property from loss due to fire, explosion, and related hazards.

ADMISSION REQUIREMENTS

Young men and women who wish to become *professional engineers* should enroll in an *academic* program in high school. A good academic record in high school is a basic requirement. Subjects that are recommended for admission are these

Subjects	Recommended 4 units	Acceptable 4 units
English		
Mathematics (college preparatory)—including algebra (2), plane geometry (1), and solid geometry, trigonometry, or advanced mathematics	3½	3½
History and social sciences	2	1
Physical sciences	2	1
Foreign language—German or French	2	0
Unspecified academic subjects or suitable electives	2½	6½
Total	16	16

A complete statement of admission requirements and policies will be found in *An Adventure in Learning*. Application for admission should be made to the Director of Admissions, University of Maryland, College Park, Maryland.

ADVENTURE IN LEARNING

All freshmen in the College of Engineering enroll in essentially the same subjects as detailed under Curricula in this catalog.

Each student will select his major-line department before he begins his sophomore year's work. Thereafter he will pursue the approved program of his department which leads to the bachelor's degree.

Advanced students who show promise of creativity and leadership in engineering, in the engineering sciences, and in teaching and research, are encouraged to continue in a program of graduate study leading to master's and doctor's degrees. There is an acute shortage of engineers with earned doctor's degrees. Able men and women *with gumption* will find challenging opportunities if they have such top-level preparation. The best time to plan and to begin preparing for these top-level opportunities is while one is in high school. Parents and teachers can help by leading, by pointing ways, and by maintaining proper standards of performance and conduct. But the lifelong *adventure in learning*, which is the true characteristic of the well-educated man or woman, demands systematic mental exercise throughout life. "Chance favors the prepared mind!"

COSTS

Annual costs of attending the University are about as follows: \$185.00 fixed charges; \$106.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged for all new students. A charge of \$300.00 is assessed to all students who are non-residents of the State of Maryland. A detailed statement of fees and expenses is printed in the University publication, *An Adventure in Learning*.

AIR SCIENCE INSTRUCTION

The Basic Air Science program must be completed successfully by all male students unless they are specifically exempted under University rules.* *It is a prerequisite for graduation and it must be taken by all eligible students during the first two years of attendance at the University whether they intend to graduate or not.* Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

A.S. 1 and A.S. 4 are currently ½-credit courses; and A.S. 2 and A.S. 3 are 2-credit courses. To satisfy the remaining objectives of Basic Air Science the AFROTC Student will take and be credited with an additional course of two credits or more selected from his regular college curriculum and approved by the Head of the Department of Air Science during registration.

During their junior and senior years, selected students may carry Advanced Air Science courses which lead to a regular or reserve commission in the United States Air Force. Students in the College of Engineering who *complete* the program of Advanced Air Science (A.S. 101, 102, 103, 104) at the University of Maryland may substitute such credit for History of American Civilization (H 5, 6).

LIBRARIES

The libraries of the University are located on both the College Park and Baltimore campuses. They include the Theodore R. McKeldin Library and the many college and departmental libraries which house special collections. Because of the location of the University the large libraries of Baltimore and Washington are a valuable asset to graduate work. Arrangements can be made for personal work in the Enoch Pratt Library of Baltimore, the Library of Congress, the United States Department of Agriculture Library and the many fine collections of other government agencies in Washington.

Located in a geographical area rich in library resources, the University's libraries are well equipped to serve the engineering programs of study and re-

*See *Adventure in Learning* for detailed statement of "Bases for Exemption from Air Force ROTC instruction."

General Information

search. The Engineering and Physical Sciences Library which supplements the Science and Technology Division of the general University Library is in the north wing of the Mathematics Building. This Library has a reading room on the first floor and three decks of book stacks above with a capacity of over 100,000 volumes. Stacks are open to all students. Individual study desks and lockers are assigned by the semester. Six small conference rooms, equipped with chalkboards, are available for group study. Carrels are reserved for graduate students. Micro-film and micro-card readers are maintained for use along with a complete photocopying service.

The Library collection covers the fields of engineering, mathematics, physics and industrial education. Its journal holdings represent over a thousand titles in science and technology; more than eight hundred are currently received. Several personal libraries of outstanding scientists and engineers have been acquired by the Library, the most extensive being the private collections of Max Born and Richard Von Mises. The Library is a designated depository of U.S. Atomic Energy Commission unclassified reports, including those of atomic energy establishments of Great Britain, Canada and other nations. Inter-library loan agreements assure the receipt of needed special materials from other libraries throughout the country.

GENERAL FACILITIES

The College of Engineering, and departments in other colleges of the University, are well equipped for instruction and basic research in their respective areas of activity. There is excellent interdepartmental cooperation in furthering studies of mutual interest.

SCHOLARSHIPS AND GRANTS-IN-AID

Scholarships and grants-in-aid are awarded each year to selected students in the College of Engineering. A list of such awards is published in the University publication *An Adventure in Learning*. Applications should be filed on forms which may be obtained from the Director, Office of Scholarships and Grants-in-Aid, University of Maryland, College Park, Maryland.

HONORS AND AWARDS

The College of Engineering schedules annually in the Spring an *Honors Day Convocation* to direct public attention to students and faculty who have distinguished themselves by scholarship and worthy activities. Families and friends of honorees, sponsors of scholarships and awards, alumni, and others interested in the University are cordially invited to this convocation.

PROFESSIONAL AND HONOR SOCIETIES

Student branches of the following national engineering societies are established in the College of Engineering: American Institute of Chemical Engineers, American Society of Civil Engineers, American Institute of Electrical Engineers,

American Society of Mechanical Engineers, Institute of Aeronautical Sciences, and Institute of Radio Engineers.

Each student is urged to be active in his engineering society. At meetings of professional societies he will meet distinguished engineers representing science, industry, practice, and public service. In discussions of scientific and engineering subjects he can learn to think for himself and to speak effectively. In teams and committees he can learn to work effectively with others. Indeed, it pays a student to be active in his student branch as it pays a graduate engineer to be active in his national engineering society.

Engineering students are encouraged to attend meetings of local sections of their professional and scientific societies in nearby Baltimore and Washington, to get acquainted with other men in their fields, and to visit nearby industries, public works, libraries and laboratories.

The following national honorary societies of particular interest to students in engineering and related sciences have active chapters at the University of Maryland: Tau Beta Pi, general engineering; Sigma Xi, scientific research; Phi Kappa Phi, senior scholarship; Eta Kappa Nu, electrical engineering; Pi Tau Sigma, mechanical engineering; Alpha Sigma Mu, metallurgy; Chi Epsilon, civil engineering.

GRADUATE STUDY

An applicant for admission to the Graduate School must hold a bachelor's or a master's degree from a college or university of recognized standing. The applicant shall furnish an official transcript of his collegiate record which for unconditional admission must show creditable completion of an adequate amount of undergraduate preparation of high quality for graduate work in his chosen field.

Application for admission to the Graduate School should be made not later than September 1 for the fall term and January 1 for the spring term on blanks obtained from the office of the Dean of the Graduate School, University of Maryland, College Park, Maryland. Information on graduate work is published in the Graduate School Announcements.

Graduate Assistantships and Research Assistantships with stipends for service, and Fellowships, are sometimes available for study and research in the several departments of the College of Engineering. Only full-time students who have been admitted to the Graduate School are eligible for appointment. Preference is given to graduate students who are American citizens in view of limitations of available funds. Foreign students may be considered for vacancies after they have completed at least one year of full-time graduate study in residence at the University of Maryland. Letters of application for assistantships or fellowships should be directed to the head of the student's major department in the College of Engineering.

General Information

FOR ADDITIONAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean
(College in which you are interested)
The University of Maryland
College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean
(School in which you are interested)
The University of Maryland
Lombard and Greene Streets
Baltimore 1, Maryland

CURRICULA AND PROGRAMS

COURSES IN THE NORMAL CURRICULUM OR PROGRAM AND PRESCRIBED CREDIT hours leading to the degree Bachelor of Science are outlined on the following pages for each department in the College of Engineering. “. . . No student may modify the prescribed number of hours without special permission from the dean of his college.” The courses in each curriculum may be classified in the following categories:

1. Certain courses required of all undergraduate students in the University. Students who are not specifically exempted must schedule the following courses: Basic Air Science (see p. 3, this catalog) for men; physical activities (4 credits) for men and women; and Personal and Community Health (4 credits) for women.

2. Courses in the American Civilization Program. These include English (12 credits); American history (6 credits); American government (3 credits); and approved electives (3 credits). See also *University General and Academic Regulations*.

3. Courses in the physical sciences—mathematics, chemistry, physics . . .

4. Collateral engineering courses—engineering sciences, and other courses approved for one curriculum but offered by another department.

5. Courses in the major department.

A student should obtain written approval for any substitutions of courses from the department head and the dean of his college.

BASIC CURRICULUM FOR FRESHMEN

Freshmen in the College of Engineering regularly schedule the following courses:

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature ¹	3	3
Math. 18, 19—Elementary Mathematical Analysis ¹	5	5
Chem. 1, 3—General Chemistry	4	4
E. S. 1. Engineering Graphics ¹	3	..
E. S. 10. Introductory Mechanics . . . . .	..	3
A. S. 1, 2—Basic Air Science (men)	½	2
Hea. 2, 4—Personal and Community Health (women)	2	2
Physical Activities	1	1
Total	16½ or 18	18

¹Enrollment in English, history, mathematics and E. S. 1 depends on the outcome of the classification tests. Students who have *exemptions* in English, schedule Eng. 21; in history, schedule H. 56; in American government, schedule approved elective. Students who pass the highest level classification test in mathematics schedule Math. 18 and E. S. 1; others schedule Math. 1 *only, without credit*.

AERONAUTICAL ENGINEERING

Aeronautical engineering involves the application of the laws of physics and mathematics to the problems of flight through the earth's atmosphere and outer space. The main sub-divisions of the field are aerodynamics, structures, and propulsion, although many problems, such as those of aeroelasticity and flutter, cut across dividing lines. The aerodynamicist must start out with an understanding of the laws of fluid flow at low speed, then modify these principles for the effects of higher speeds. At supersonic speeds, he must account for shock waves in flight at moderate altitudes and further changes in the flow at extremely high altitudes. At extremely high speeds he must add to this an understanding of the effects of ionization and molecular dissociation. The structures engineer is mainly concerned with the ability of the vehicle to withstand the forces and accelerations in flight. For high performance aircraft and missiles, he must consider the aerodynamic heating resulting from high-speed flight and allow for the weakening effect on materials. The propulsion engineer must deal with rocket, jet, or propeller systems which serve to accelerate the vehicle and to offset drag forces during flight.

The aeronautical engineer is continually beset with the problems of maintaining adequate margins of safety with a minimum of weight. The saving of even one pound of weight in fuel or structure of a missile is of such value as to justify the expenditure of many man-hours. These high dividends for thoroughness and precision in technical understanding are a source of gratification to the aeronautical engineer.

AERONAUTICAL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	Semester	
	I	II
G. & P. 1—American Government	3	
American Civilization—Elective Group I.....		3
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
M.E. 20, 21—Manufacturing Tools and Processes	1	1
E.S. 20. Mechanics of Materials	3	
E.S. 21. Dynamics		3
A.S. 3, 4—Basic Air Science (men)	2	½
Physical Activities	1	1
Total	19	17½

Aeronautical Engineering Curriculum

	(Semester)	
	I	II
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature	3	3
H. 5, 6—History of American Civilization	3	3
M.E. 24—Dynamics	3	
M.E. 100—Thermodynamics	3	
Math. 64—Differential Equations for Engineers	3	
M.E. 101—Heat Transfer		3
Aero. E. 101—Aerodynamics I		3
M.E. 103—Metallography		3
E.E. 51, 52—Principles of Electrical Engineering	4	4
Total	19	19
<i>Senior Year</i>		
Elective		3
Aero. E. 117—Aircraft Vibrations	3	
Aero. E. 102—Aerodynamics II	2	
Aero. E. 107, 108—Airplane Design	4	4
Aero. E. 109, 110—Airplane Power Plants	3	3
Aero. E. 111, 112—Aeronautical Laboratory	2	2
Aero. E. 113, 114—Mechanics of Aircraft Structures	4	3
Aero. E. 115—Aerodynamics III		3
Total	18	18

CHEMICAL ENGINEERING

Chemical engineering deals primarily with the industrial and economic transformation of matter. It seeks to assemble and develop information on chemical operations and processes of importance in modern life and to apply this under executive direction, according to engineering methods, for the attainment of economic objectives. Modern chemical research has contributed so much to industrial and social welfare that chemical engineering may now be said to cover practically every operation in which an industrial material undergoes a change in its chemical identity. It is broadly responsible for the process industries. Chemical engineering arose from industrial chemistry and chemical technology, and these are recognized as sub-divisions of the field.

As a science, metallurgy involves an understanding of the fundamentals involved in the development of alloys or combinations of metals, processing or treatment to enhance the properties of metals, techniques of fabrication, protection against corrosion.

The chemical metallurgist is concerned with the extraction of metals from their ores, refining them, and making alloys with desirable properties. He is further interested in the chemistry involved in processing metals as in carburization, decarburization, and desulfurization of solid steels. The physical metallurgist is primarily interested in the crystal structure of metals together with their physical or mechanical properties.

Nuclear engineering involves the industrial application of the effects of nuclear or high energy radiation on matter. The field now centers around the nuclear fission reactor. It involves supporting operations which must be closely integrated with the irradiation activities, such as preparing special materials (like thorium and uranium) by chemical and isotopic separation, and processing irradiated nuclear fuels. It is a program of graduate study at the University of Maryland. Related courses are given in other departments, especially the Departments of Mechanical Engineering, Physics, and Chemistry.

CHEMICAL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature	3	3
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
Chem. 19—Quantitative Chemical Analysis	4	.
Ch. E. 15—Stoichiometry and Chemical Engineering Control . .		4
A.S. 3, 4—Basic Air Science (men)	2	½
Physical Activities	1	1
Total	19	17½

Chemical Engineering Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Econ. 37—Fundamentals of Economics	3	..
Chem. 35, 37. Elementary Organic Chemistry Lectures	2	2
Chem. 36, Elementary Organic Laboratory	2	..
Ch. E. 103, f, s—Elements of Chemical Engineering	3	3
Chem. 187, 189—Physical Chemistry	3	3
Chem. 188, 190—Physical Chemistry Laboratory	2	2
E.S. 20—Mechanics of Materials	3	..
E.S. 21—Dynamics	..	3
Ch. E. 116—Applied Math. in Chemical Engineering I	..	3
Ch. E. 140—Introduction to Nuclear Technology	2	..
G. & P. 1—American Government	..	3
Total	20	19
<i>Senior Year</i>		
H. 5, 6—History of American Civilization ¹	3	3
Ch. E. 105, f, s—Advanced Unit Operations	5	5
Ch. E. 109, f, s—Chemical Engineering Thermodynamics	3	3
Ch. E. 112, 113—Industrial Chemical Technology	2	3
E. E. 51, 52—Principles of Electrical Engineering	4	4
Ch. E. 104—Seminar	..	1
Ch. E. 123—Elements of Plant Design	2	..
Ch. E. 131—Chemical Engineering Economics	..	2
Met. 150—Physical Metallurgy	3	..
Total	22	21

¹Students who are to become candidates for graduate degrees requiring foreign language may elect instead a foreign language and secure the American history credit in their graduate program.

CIVIL ENGINEERING

Civil engineering is the professional hub of the construction and transportation industries which together are perhaps the largest and most diversified industries in America.

Professional civil engineers plan, design, and supervise construction of virtually every large enterprise involving construction, transportation, industrial facilities, and public works. Having planned and supervised construction of a major project, civil engineers are often selected to direct its operation as managers or executives.

Civil engineers design structures such as bridges, buildings, dams, power plants, tunnels . . . They plan and direct the use of water for cities, industries, flood control, irrigation, power . . . They plan water treatment plants, sewerage systems, and waste disposal facilities and supervise their operation . . . They manage municipal and regional development projects, public works, and private enterprise of great variety.

The civil engineer may work primarily in the office; primarily in the field; or he may divide his duty between field and office. To accomplish his ends as a creative planner and designer, he must be proficient in adapting mathematics, the physical sciences, and materials of construction. He must have a working knowledge of men and of machines. He must be an alert observer with an eye for significance. He must be fair and resourceful in handling men, competent in devising adequate and economical solutions to a *whole* problem, responsible in handling funds, and practical in getting a job done adequately and on time. Adequacy, safety, economy, resourcefulness, integrity, and a sense of fitness are important considerations in everything a civil engineer does.

The foundations of professional engineering service are laid in college where in tackling a *project* the student learns to use mathematics and physical sciences; learns to communicate effectively in the *engineer's languages* of words, pictures, and numbers; learns to think and speak for himself; and learns to work in teams with others.

CIVIL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	—Semester—	
	I	II
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature	3	3
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
E.S. 20. Mechanics of Materials	3	..
E.S. 21. Dynamics . . . . .	..	3
A.S. 3, 4—Basic Air Science (men)	2	½
Physical Activities	1	1
Total	18	16½

Civil Engineering Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Econ. 37—Fundamentals of Economics	3	..
G. & P. 1—American Government .....	..	3
C.E. 24—Dynamics .....	..	3
C.E. 30—Materials of Engineering	3	..
C.E. 110, 111—Surveying I, II	3	3
C.E. 140—Fluid Mechanics	3	..
C.E. 160—Structural Analysis I .....	..	4
C.E. 180—Transportation .....	..	3
E.E. 50—Fundamentals of Electrical Engineering	3	..
C.E. 100—Seminar .....	..	3
Math. 64—Differential Equations for Engineers	3	..
Total	18	19
<i>Senior Year</i>		
H. 5, 6—History of American Civilization	3	3
C.E. 101—Construction Planning .....	..	3
C.E. 150—Soil Mechanics	4	..
C.E. 161—Structural Analysis II	4	..
C.E. 162—Structural Design (Steel)	3	..
C.E. 163—Structural Design (Concrete) .....	..	3
M.E. 105—Principles of Mechanical Engineering .....	..	3
C.E. 170—Water Supply	3	..
C.E. 171—Sewerage .....	..	4
Approved Technical Elective ¹	3	3
Total	20	19

¹To provide depth in selected fields, students shall elect, with the advice and approval of the department, from such groups of technical courses as will be offered in the fields of advanced strength of materials, advanced fluid mechanics, highway engineering, special study in a particular field and 100-level courses in other departments of engineering or science.

ELECTRICAL ENGINEERING

The technical portion of an electrical engineering education is devoted largely to the study of electricity and magnetism. A wide variety of physical quantities is encountered. One physical quantity which is common to all branches of science and which is of particular interest to the electrical engineer is energy. Energy appears in various forms throughout the physical universe.

Electricity (or electric charge) is, in a broad sense, a physical agent used to transform or convert energy from one form to another. The separation of electric charge into its positive and negative constituents results in potential energy of a form that can be readily converted into other forms of energy. This property of electric charge is responsible for the widespread use of electricity, particularly where energy conversions are involved or where energy (including the energy content of intelligence) is to be transmitted from one place to another. It is toward understanding these energy conversions that the undergraduate curriculum is directed. Both theoretical and laboratory courses are required.

Electrical science is an exacting discipline which places very little value on *limited* mastery of subject matter. In his quest of thorough understanding, the student develops a questioning and critical attitude toward experimentally-determined relationships as well as toward the mathematical reasoning which accompanies the engineering exploitation of basic physical principles.

Electrical engineering deals with the generation, transmission, distribution, and utilization of electrical energy; and with the transmission and reception of intelligence as, for example, telephone, radio, radar, and television systems. The guidance of missiles to outer space and the telemetering of physical data from outer space are special types of communication systems which are presently gaining prominence. Automatic regulation (or servomechanisms), data processing, and instrumentation are relatively new branches of electrical engineering. Recent developments in the field of solid state physics have introduced still another branch, namely, transistor electronics.

The principal objectives of the Department are: (a) To impart to both graduate and undergraduate students a mature understanding of the basic scientific principles of electrical engineering; (b) to develop an awareness and appreciation of both experimental and analytical methods of solving engineering problems.

The Department of Electrical Engineering is qualified by reason of faculty interest and equipment to pursue basic research in the fields of automatic regulation, radio-wave propagation, active-network synthesis, and microwave engineering. Microwave engineering at the University of Maryland includes the fundamental principles of maser operation as well as the actual engineering associated with this device.

ELECTRICAL ENGINEERING CURRICULUM

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government	3	..
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
E.S. 20. Mechanics of Materials	3	..
E.S. 21. Dynamics .....	..	3
E.E. 1—Basic Electrical Engineering .....	..	4
A.S. 3, 4—Basic Air Science (men)	2	½
Physical Activities	1	1
Total	18	17½
<i>Junior Year</i>		
H. 5, 6—History of American Civilization	3	3
American Civilization Elective Group I	3	..
C.E. 141—Fluid Mechanics (2nd semester preferably) .....	..	3
E.E. 60—Electricity and Magnetism	3	..
E.E. 6—Electricity and Magnetism	3	..
Ch.E. 140—Introduction to Nuclear Technology .....	..	2
E.E. 65—Direct Current Machinery .....	..	3
E.E. 100—Alternating Current Circuits	4	..
E.E. 101—Engineering Electronics .....	..	4
E.E. 103—Engineering Analysis	2	..
E.E. 104—Communications .....	..	3
Total	18	18
<i>Senior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature	3	3
M.E. 100—Thermodynamics	3	..
M.E. 107—Heat Power—Chemical and Nuclear .....	..	4
E.E. 102—Alternating Current Machinery	4	..
E.E. 105—Radio Engineering	4	..
E.E. 106—Radio Engineering, or		
E.E. 107—Electrical Measurements .....	..	4
E.E. 108—Electric Transients	3	..
E.E. 109—Pulse Techniques .....	..	3
Technical Elective ¹ .....	..	3
Total	17	17

¹To be selected from the following group:

E.E. 110—Transistor Circuitry (3)
 E.E. 115—Feedback Control Systems (3)
 E.E. 120—Electromagnetic Waves (3)

MECHANICAL ENGINEERING

The principal function of the mechanical engineer is to apply science and technology creatively to the design and manufacture of machines for the practical use of mankind. Any machine or manufactured product requires, basically, (1) the art and science of generating, transmitting, and utilizing mechanical power, and (2) research, development, designing, and the coordination of materials, personnel, and management. These basic requirements define mechanical engineering. The following *professional divisions* of the American Society of Mechanical Engineers give a good idea of types of work in which the mechanical engineer may become associated: applied mechanics, aviation, materials handling, management, oil and gas power, fuels, safety, hydraulics, metals engineering, heat transfer, process industries, production, machine design, lubrication, petroleum, nuclear engineering, railroads, power, textile, gas turbine power, wood industries, rubber and plastics, and instruments and regulators.

Because of the wide variety of engineering opportunities available to the mechanical engineer, the curriculum is designed to give the student a thorough training in the basic sciences: physics, chemistry, mathematics, solid and fluid mechanics, dynamics, thermodynamics, heat transfer, metallography, electricity, nuclear technology, power, and design.

There are opportunities for mechanical engineers in all manufacturing enterprises. There are opportunities in research, design, production, testing, maintenance, and sales. There are opportunities for engineers who can devise manufactured products that utilize power in any form for the convenience of man. There are opportunities wherever there are factories. Since every town of moderate size has factories, the mechanical engineer may select the community where he wishes to make his home and be reasonably certain that he can find satisfactory employment there.

MECHANICAL ENGINEERING CURRICULUM

Sophomore Year	Semester	
	I	II
G. & P. 1—American Government	3	..
American Civilization Elective Group I .....	..	3
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
M.E. 20, 21—Manufacturing Tools and Processes	1	1
E.S. 20. Mechanics of Materials	3	..
E.S. 21. Dynamics .....	..	3
A.S. 3, 4—Basic Air Science (men)	2	½
Physical Activities	1	1
Total	19	17½

Mechanical Engineering Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature	3	3
Math. 64—Differential Equations for Engineers	3	
E.E. 51, 52—Principles of Electrical Engineering	4	4
M.E. 24—Dynamics	3	
Ch.E. 140—Introduction to Nuclear Technology	2	
M.E. 100—Thermodynamics	3	
M.E. 101—Heat Transfer		3
M.E. 102—Fluid Mechanics		3
M.E. 103—Metallography		3
M.E. 104—Kinematics		2
Total	18	18
<i>Senior Year</i>		
H. 5, 6—History of American Civilization	3	3
M.E. 150, 151—Heat Power—Chemical and Nuclear	4	4
M.E. 152, 153—Mechanical Engineering Design	4	3
M.E. 154, 155—Mechanical Laboratory	2	2
Technical Electives ¹	6	6
Total	19	18

¹To be selected from the following group:
M.E. 156—Heating and Air Conditioning (3)
M.E. 157—Refrigeration (3)
M.E. 158, 159—Applied Elasticity (3,3)
M.E. 160, 161—Advanced Dynamics (3,3)
M.E. 162, 163—Advanced Thermodynamics (3,3)
M.E. 164—Research (3)
M.E. 165—Creative Engineering (3)
M.E. 166, 167—Advanced Fluid Mechanics (3,3)

FIRE PROTECTION

Fire protection is concerned with the scientific and technical problems of preventing loss of life and property from fire, explosion and related hazards, and of evaluating and eliminating hazardous conditions.

The fundamental principles of fire protection are relatively well defined and the application of these principles to a modern industrialized society has become a specialized activity. Control of the hazards in manufacturing processes calls for an understanding not only of measures for fire protection but of the processes themselves. Often the most effective solution to the problem of safeguarding a hazardous operation lies in the modification of the process rather than in the installation of special extinguishing equipment. The expert in fire protection must be prepared to decide in any given case what is the best and most economical solution of the fire prevention problem. His recommendations are often based not only on sound principles of fire protection but on a thorough understanding of the special problems of the individual property.

Modern fire protection utilizes a wide variety of mechanical and electrical equipment which the student must understand in principle before he can apply them to special problems. The fire protection curriculum emphasizes the scientific, technical and humanitarian aspects of fire protection, and the development of the individual student.

The problems and challenges which confront the specialist in fire protection include the reduction and control of fire hazards due to processes subject to fire or explosion in respect to design, installation and handling, involving both physical and human factors; the use of buildings and transportation facilities to restrict the spread of fire and to facilitate the escape of occupants in case of fire; the design, installation and maintenance of fire detection and extinguishing devices and systems; and the organization and education of persons for fire prevention and fire protection.

FIRE PROTECTION CURRICULUM

<i>Sophomore Year</i>	Semester	
	I	II
G. & P. 1—American Government	3	..
Soc. 1—Sociology of American Life, or	..	3
Phil. 1—Philosophy of Modern Man or		
Psych. 1—Introduction to Psychology }		
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
E.S. 20—Mechanics of Materials	3	..
E.S. 21—Dynamics .....	..	3
A.S. 3, 4—Basic Air Science (mcn)	2	½
Physical Activities	1	1
Total	18	16½

	Semester	
	I	II
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature or		
Eng. 5, 6—Composition and English Literature	3	3
C.E. 30—Materials of Engineering	3	
B.A. 191—Property Insurance		3
Econ. 37—Fundamentals of Economics	3	
C.E. 141—Fluid Mechanics		3
Ind. Ed. 143, 144—Industrial Safety Education	2	2
F.P. 104—Essentials of Fire Protection	3	
F.P. 105—Fire Protection Organization		3
Approved Electives	3	3
Total	17	17
<i>Senior Year</i>		
H. 5, 6—History of American Civilization	3	3
F.P. 117—Technical Projects		4
F.P. 111—Special Hazards and Problems	4	
F.P. 112—Fire Protection Fluids and Systems	3	
F.P. 110—Installations and Equipment		4
F.P. 120—Insurance Rating and Schedules	3	
C.E. 101—Civil Engineering Planning		3
Approved Technical Electives	3	3
Total	16	17

AGRICULTURAL ENGINEERING

The Department of Agricultural Engineering, in the College of Agriculture, offers a four-year academic program leading to the degree Bachelor of Science. The program is described in the catalog of the College of Agriculture.

INTERIM METALLURGY PROGRAM

The program listed below was formerly the metallurgical option of the Department of Chemical Engineering. This option was discontinued effective February 1, 1960. However, students who were enrolled in it may continue in the interim program leading to the degree, Bachelor of Science (without curriculum designation), as in recent years.

This interim metallurgy program differs from the chemical engineering curriculum chiefly in the junior and senior years when a total of 35 semester-hours of courses in chemical engineering are replaced by 30 semester-hours of courses in metallurgy subjects.

While both the interim metallurgy program and the courses designated *Met.* continue to be assigned to the Department of Chemical Engineering, neither an "option" nor a new "curriculum" is implied.

Interim Metallurgy Program

INTERIM METALLURGY PROGRAM

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government	3	..
Math. 20, 21—Calculus	4	4
Phys. 20, 21—General Physics	5	5
Chem. 19—Elements of Quantitative Analysis	4	..
Ch. E. 15—Stoichiometry and Chemical Engineering Control. ..	..	4
Met. 23—Non-ferrous and Ferrous Metallurgy .....	..	3
A.S. 3, 4—Basic Air Science (men)	2	½
Physical Activities	1	1
Total	19	17½
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature; or		II
Eng. 5, 6—Composition and English Literature	3	3
E.S. 20. Mechanics of Materials	3	..
E.S. 21. Dynamics .....	..	3
Ch. E. 103, f, s—Elements of Chemical Engineering	3	3
Met. 150, 151—Physical Metallurgy	3	3
Met. 152, 153—Physical Metallurgy Laboratory	2	2
Chem. 187, 189—Physical Chemistry	3	3
Chem. 188, 190—Physical Chemistry Laboratory	2	2
Total	19	19
<i>Senior Year</i>		
Met. 182, 183—Optical & X-Ray Metallography	4	4
Met. 164, 166—Thermodynamics of Metallurgical Processes. ..	3	3
Ch. E. 116—Applied Math. in Chemical Engineering I ....	..	3
Met. 104—Senior Metallurgical Seminar	1	1
Met. 168, 170—Metallurgical Investigations	2	4
Econ. 37—Fundamentals of Economics	3	..
H. 5, 6—History of American Civilization ¹	3	3
Ch. E. 140—Introduction to Nuclear Technology	2	..
Total	18	18

¹Students who are to become candidates for graduate degrees requiring foreign language may elect instead a foreign language and secure the American history credit in their graduate program.

COGNATE ACTIVITIES

DEPARTMENTS IN THE COLLEGE OF ENGINEERING WHICH CONTRIBUTE significantly to activities in education, research, and professional service—although they have no academic curricula—include the Institute for Fluid Dynamics and Applied Mathematics; the Department of Wind Tunnel Operations; and the Fire Service Extension Department. These departments work closely with academic departments of the University in areas of common interest. The scope of work in each department area is outlined briefly in paragraphs which follow.

Fellowship grants and contracts for fundamental research, contribute to the overall professional-scientific activity of the staff of the College. The staff of the College of Engineering available for research studies will be glad to discuss proposed problems of importance to industry and of public interest where means can be found for the cooperative researches; such studies may be undertaken with the approval of the administration of the University.

Institute For Fluid Dynamics and Applied Mathematics

The Institute for Fluid Dynamics and Applied Mathematics does fundamental research in theoretical and experimental fluid dynamics and in the applications of mathematics.

Theoretical and experimental studies of gases at high temperatures and high-speed flow in fields of various nature and around bodies are being carried out with the aid of shock tubes of special design with particular attention being given to the new field of magneto gas dynamics. A low-turbulence wind tunnel is available for studies of turbulence. Other facilities make possible the investigation of vortex flow and of transition from laminar to turbulent motion. Work in mathematics ranges from classical hydro-dynamics to the modern theory of transonic flow, and includes problems in eigenvalues, elasticity, electrostatics and partial differential equations. A research program is under way in statistical mechanics, with emphasis on the theory of irreversible processes and the theory of solids. The research program of the Institute is partially supported by outside contracts.

The Institute cooperates in theoretical and experimental research with other scientific agencies and, in so far as its resources permit, offers its facilities to scholars in other institutions who may wish to spend their leave periods in study and research.

The faculty and staff of the Institute work closely with faculty and staff of other departments on problems of mutual interest. They join in weekly seminars and colloquia on research problems in applied mathematics and applied mechanics.

The faculty of the Institute, in cooperation with the faculty of other departments of the University, offer courses for students working toward advanced degrees. These courses form part of the regular departmental offerings and further information about them may be obtained from the Graduate School Announcements.

Wind Tunnel Operations

The Wind Tunnel Operations Department conducts a program of experimental research and development in cooperation with the aircraft industry, agencies of government, and other industries with problems concerning aerodynamics. Testing programs cover a variety of subjects including all types of aircraft, missiles, ordnance, parachutes, radar antennas, trucks, automobiles, structures, and exterior equipment subject to high winds.

The Department has a 7.75 x 11-foot wind tunnel that can be operated at speeds from 0 to 240 mph. This facility has powered model drive equipment, and auxiliary vacuum and high pressure air supplies for boundary layer control studies. Supporting shops include complete woodworking, machine shop, photographic, and instrumentation facilities.

The full time staff of the Department includes engineering, computing, shop, and technical operations personnel. This staff cooperates with other faculty and students in the College of Engineering on special problems of mutual interest.

Fire Service Extension Department

The Fire Service Extension Department provides in-service training for volunteer, municipal, and industrial firemen and serves in an advisory capacity in matters of fire prevention, fire protection, and fire safety regulations. Classes are conducted in Maryland by local instructors who work under the guidance of Senior Instructors of the Department. Basic training of 60 clock hours is given in the fundamentals of firemanship. An advanced course of 60 clock hours covers the technical field of fire prevention, control and extinguishment. A third section of 60 clock hours emphasizes related technical information. A training course of 42 clock hours for rescue operations is also available. An increasingly important program is that of establishing and improving fire prevention and fire protection in Maryland industry, institutions and mercantile establishments.

A four-day short course is held annually in September at the University. Specialized courses include instructor training, pump school series, hydraulics, aerial ladders. There are also conferences for fire company presidents, conferences for fire chiefs, and schools for fire officers.

Additional information may be obtained from the Director, Fire Service Extension Department, University of Maryland, College Park, Maryland.

Other Research Laboratories

The National Sand and Gravel Association, the National Ready Mixed Concrete Association, and the Asphalt Institute have research laboratories on the campus. These agencies also sponsor fellowships for graduate students who will devote half-time to graduate study and half-time to research on approved projects in their respective areas of interest. Fellows will be selected from ap-

plicants who have been admitted to graduate study in some field of engineering. Applications for admission to graduate study should be made on forms that may be obtained from the Dean of the Graduate School, University of Maryland, College Park, Maryland.

COURSE OFFERINGS

The University reserves the right to change any provisions or requirements at any time within the student's term of residence; or to withdraw or discontinue any course; or to ask a student to withdraw when it considers such action to be in the best interests of the University. If a scheduled course is withdrawn or discontinued, the fee charged for such course will be returned, and the corresponding fee for change in registration will not be charged.

Courses designated by numbers 1 to 99 are for undergraduates; above 200 for graduate students; and from 100 to 199 for advanced undergraduates and (subject to official approval) for graduates also.

A separate schedule of courses is issued each semester showing the hours, places of meeting, and other information required by the student in making out his program. These schedules for a particular semester are available during its period of registration.

The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student—as does the responsibility for proper achievement in courses in which he is enrolled. Each student should be familiar with the provisions of this catalog, *University General and Academic Regulations*, and other pertinent regulations.

The courses in each engineering curriculum, as classified on page 7, form a pattern of "sequences" and "parallels" in subject matter. In this respect, curricula in engineering may differ from curricula in other colleges. Some regulations which are generally applicable to all students (see *University General and Academic Regulations*) may need clarification for purposes of orderly administration among engineering students. The following administrative interpretations are noted for the current year:

1. A student who is enrolled for more than 6 semester-hours of work must register for physical education and/or Basic Air Science (Health for women students) each semester until he has fully satisfied the University's requirements in both subjects. These subjects may not be deferred, and two courses in one area may not be scheduled the same semester.

2. A student has attained junior standing *on time* if, among the first 63 applicable academic semester-hours he has scheduled, he has completed with an *average* of "C" = 2.0 or better not less than 56 academic semester-hours which are listed in his curriculum for the freshman and sophomore years. Otherwise Academic Regulations, Section B, apply clearly.

3. A student who has not attained junior standing *on time* (as noted above) will be reported to the Registrar in accord with Academic Regulations, Section B.

4. To be eligible for a bachelor's degree in the College of Engineering, a student must have an *average* of at least "C" = 2.0—(a) in all subjects applicable to his degree, and (b) in all junior-senior courses in his major department. Responsibility for knowing and meeting all degree requirements for graduation in any curriculum rests with the student.

A student is advised to schedule a reduced load if his record of scholarship during the previous semester was unsatisfactory (a) because he failed courses, or (b) because his average during the previous semester was less than 2.0 ("C"). A student who is on probation may not schedule more than 16 semester-hours of work in any semester, including credit for physical educational and military science.

Courses administered by departments in the College of Engineering are noted on pages 25-51 and selected courses administered by other departments of the University on pages 52-59. The number of credit hours is shown in the arabic numerals in parenthesis after the title of each course.

AERONAUTICAL ENGINEERING

Professors: SHERWOOD, CORNING, AND WESKE.

Associate Professor: RIVELLO.

Lecturers: HAMA, PAI, NICOLAIDES, SEIGEL AND WILSON.

For Advanced Undergraduates and Graduates

Aero. E. 101. Aerodynamics I. (3)

Second semester. Three lectures a week. Prerequisites, Phys. 21 and Math. 21. Basic fluid mechanics and aerodynamic theory. (Sherwood.)

Aero. E. 102. Aerodynamics II. (2)

First semester. Two lectures a week. Prerequisite, Aero. E. 101. Elements of hydrodynamics and application to engineering problems. (Sherwood.)

Aero. E. 107, 108. Airplane Design. (4, 4)

First and second semesters. Two lectures and two supervised calculation periods per week. Prerequisites, Aero. E. 101, and M.E. 22, 23 (or E.S. 20). Aero. E. 102 and Aero. E. 113 to be taken concurrently. Theory and method of airplane design, airplane stability and control, airloads, and structural design. (Corning.)

Aero. E. 109, 110. Aircraft Power Plants. (3, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, M.E. 100. Study of basic operating principles of reciprocating, turbojet, turboprop, ramjet, and rocket engines. Specific topics of study include thermodynamic processes, combustion, fuels, carburetion, supercharging, lubrication, and engine performance. (Weske.)

Aero. E. 111, 112. Aeronautical Laboratory. (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisite, Aero. E. 101. To be taken concurrently with Aero. E. 102 and Aero. E. 113. Wind tunnel tests. Structure tests. Report writing, original research projects. (Staff.)

Aero. E. 113, 114. Mechanics of Aircraft Structures. (4, 3)

First and second semesters. First semester, 3 lectures and one calculation period a

week. Second semester, 3 lectures a week. Prerequisites, M.E. 22, 23 (or E.S. 20) and Math. 64. Principles and problems of airplane stress analysis and structural design. (Rivello.)

Aero. E. 115. Aerodynamics III. (3)

Second semester. Prerequisite, Aero. E. 102. Elementary theory of the flow of a compressible gas at subsonic and supersonic speeds. (Sherwood.)

Aero. E. 117. Aircraft Vibrations. (3)

First semester. Three lectures a week. Prerequisite, Math. 64. Vibration and other dynamic problems occurring in airplane structures. Specific topics of study include the single degree of freedom system, damping, forced vibrations, critical frequency multiple degrees of freedom, and vibration isolation and absorption. (Corning.)

For Graduates

Aero. E. 200, 201. Advanced Aerodynamics. (3, 3)

Prerequisites, Aero. E. 115, Math. 64. Review of thermodynamic and physical properties of gases. One dimensional flow of a perfect compressible fluid. Shock waves. Fundamental equations of aerodynamics of a compressible fluid. Two-dimensional linearized theory of compressible flow. Two-dimensional transonic and hypersonic flows. Exact solutions of two dimensional isotropic flow. Linearized theory of three-dimensional potential flow. Exact solution of axially symmetrical potential flow. Method of characteristics. Nozzle design; flow in jets; rotational flow of compressible fluid. One-dimensional viscous compressible flow. Laminar boundary layer of compressible fluids. (Pai.)

Aero. E. 202, 203. Advanced Aircraft Structures. (3, 3)

Prerequisites, Math. 64 and Aero. E. 113, 114, or permission of the instructor. Introduction to two dimensional theory of elasticity, energy methods, plate theory, theory of elastic instability. Aerodynamic heating of structures, thermal stresses, creep, creep bending and buckling, visco-elastic theory. (Rivello.)

Aero. 204, 205. Aircraft Dynamics. (3, 3)

Prerequisites, Math. 64 and Aero. E. 114. Dynamics of a rigid body and applications to airplane dynamics. Generalized coordinates and Lagrange's equations. Vibrations of simple systems. Dynamics of elastically connected masses. Influence coefficients. Mode shapes and principal oscillations. Transient stresses in an elastic structure. Wing divergence and aileron reversal. Theory of two dimensional oscillating airfoil. Flutter problems. Corrections for finite span. Compressibility effects. (Nicolaidis.)

Aero. E. 206, 207. Advanced Aircraft Power Plants. (3, 3)

Two lectures and one laboratory period a week. Prerequisites, M. E. 100; Aero. E. 109, 110. Special problems of thermodynamics and dynamics of aircraft power plants; jet and rocket engines. Research in power plant laboratory. (Weske.)

Aero. E. 208. Advanced Aircraft Design. (3)

First semester. Prerequisites Aero. E. 101, 102, 113, 114. Theory and method of airplane design. Special emphasis is placed on the derivations and theoretical background of the formulas and experimental data used. (Corning.)

Aero. E. 209. Stability and Control. (3)

Second semester. Prerequisites, Aero. E. 101, 102. Dynamic longitudinal and lateral stability and control, preceded by a brief introduction to static stability. (Corning.)

Aero. E. 210. Aerodynamic Theory. (3)

First semester. Prerequisites, Aero. E. 101, Math. 64. Fundamental equations in fluid mechanics. Irrotational motion. Circulation theory of lift. Thin airfoil theory. Lifting line theory. Wind tunnel corrections. Propellor theories. Linearized equations in compressible flow. (Sherwood.)

Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic). (3)

First and second semesters. The design and use of wind tunnels (supersonic). Review of basic aerodynamics and thermodynamics. Problems in supersonic tunnel design such as pumping, power supply, condensation and driers. Equipment for measuring results, including balances, manometers, optical instruments, such as schlieren, spark illumination and X-ray equipment. Investigation in supersonic wind tunnels are described with special reference to similitude required for conversion to full-scale. (Kurzweg.)

Aero. E. 212. 213. Bodies at Supersonic Speeds. (3, 3)

Brief review of gas dynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamic problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles. (Kurzweg.)

Aero. E. 214. Seminar.

(Credit in accordance with work outlined by Aeronautical Engineering staff.) First and second semesters.

Aero. E. 215. Research.

(Credit in accordance with work outlined by Aeronautical Engineering staff.) First and second semesters.

Aero. E. 216. Selected Aeroballistics Problems. (3)

First semester. Physical processes and aerothermodynamic laws connected with the flow around supersonic missiles. Boundary layer problems and the transfer of heat and mass. (Kurzweg.)

Aero. E. 217. Aerodynamics of Viscous Fluids. (3)

Second semester. Prerequisites, Aero. E. 101, Math. 64. Fundamental concepts. Navier-Stokes' equations. Simple exact solutions. Laminar boundary layer theory. Pohlhausen method. Turbulent boundary layer; mixing length and similarity theories. Boundary layer in compressible flow.

Aero. E. 218. Selected Topics in Aerodynamics. (3)

First or second semester. Prerequisites, Aero. E. 210, 115. Topics of current interest and recent advances in the field of aerodynamics.

CHEMICAL ENGINEERING

Professors: BECKMANN, BONNEY, SCHROEDER, PENNINGTON AND DUFFEY.

Associate Professor: SILVERMAN.

Assistant Professor: GOMEZPLATA, MARCHELLO.

Instructors: MC WILLIAMS, HO, AND MARSHECK.

Lecturers: KRUGER, LIGHTBODY, LORING, AND MOORE.

Chemical Engineering

Ch. E. 15. *Stoichiometry and Chemical Engineering Control.* (4)

Second semester. Two lectures, two 3-hour laboratories a week. Prerequisite, Chem. 19. Laboratory fee, \$8.00 per semester. Introductory laboratory studies of widely used materials, methods and computations encountered in the examination and interpretation of chemical engineering operations. Laboratory data are employed in heat and material balances of chemical processes. (Gomezplata, Marscheck.)

For Advanced Undergraduates and Graduates

Ch. E. 103, f. s. *Elements of Chemical Engineering.* (3, 3)

First and second semesters. Three hours a week. Prerequisites, Chem. 3, Math. 21, Phys. 21. Theoretical discussion of underlying philosophy and methods in chemical engineering and elementary treatment of important operations involving fluid flow, heat flow, evaporation, humidity and air conditioning, distillation, absorption, extraction and filtration. Illustrated by problems and consideration of typical processes. (Gomezplata.)

Ch. E. 104. *Chemical Engineering Seminar.* (1)

One hour a week. Students prepare reports on current problems in chemical engineering and participate in the discussion of such reports. The content of this course is constantly changing so a student may receive a number of credits by re-registration.

Ch. E. 105, f, s. *Advanced Unit Operations.* (5, 5)

Two lectures and one all-day laboratory a week. Prerequisites, Ch. E. 103 f, s, Chem. 189, 190. Laboratory fee, \$8.00 per semester. Advanced theoretical treatment of basic chemical engineering operations. Study and laboratory operation of small scale semi-commercial type equipment. A comprehensive problem involving theory and laboratory operations is included to illustrate the development of a plant design requiring the utilization of a number of fundamental topics. (Bonney.)

Ch. E. 106, f, s. *Minor Problems.* (6, 6)

Laboratory fee, \$8.00 per semester.

Ch. E. 107. *Fuels and Their Utilization.* (3)

Second semester. Three hours a week. Prerequisites, Ch. E. 103, f, s, or permission of Department of Chemical Engineering. A study of the sources of solid, liquid, and gaseous fuels, their economic conversion, distribution, and utilization. Problems.

Ch. E. 109, f, s. *Chemical Engineering Thermodynamics.* (3, 3)

Three hours a week. Prerequisites, Chem. 187, 189, Ch. E. 103, f, s, or permission of instructor. A study of the application of the principles of engineering and chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering. (Bonney.)

Ch. E. 112, 113. *Industrial Chemical Technology.* (3)

Three hours a week. Prerequisites, Ch. E. 103, f, s, or simultaneous registration therein, or permission of the Department of Chemical Engineering. A study of the major chemical processes and industries combined with quantitative analysis of process requirements and yields. Plant inspection, trips, reports, and problems. (Schroeder.)

Ch. E. 114. *Applications of Electrochemistry.* (4)

Three lecture hours and three laboratory hours per week. Prerequisite, consent of instructor. Laboratory fee, \$8.00.

Ch. E. 116. Applied Mathematics in Chemical Engineering. 1. (3)

Three lectures a week. Prerequisites, Math. 20, 21 and Ch. E. 103, f, s. A study of methods for analysis and solution of chemical engineering problems by use of differential equations. Graphical, numerical and statistical methods and approximations by use of infinite series are covered. (Gomezplata.)

Ch. E. 117. Applied Mathematics in Chemical Engineering II. (3)

Three lectures a week. Prerequisites, Ch. E. 116 or equivalent. Material covered includes formulation and solution of partial differential equations that arise in chemical engineering problems. Solution of chemical engineering problems by the calculus of finite differences, and numerical solution of partial differential equations are covered. (Gomezplata.)

Ch. E. 119. Empirical Equations and Nontography. (3)

Three hours a week. Prerequisite, consent of instructor.

Ch. E. 123, 124. Elements of Plant Design. (2, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Ch. E. 103, f, s; Ch E. 116; Chem. 189. The solution of typical problems encountered in the design of chemical engineering plants. Only Ch. E. 123 required of seniors. (Schroeder.)

Ch. E. 131. Chemical Engineering Economics. (2)

Second semester. Two lectures a week. Prerequisites, simultaneous registration in or completion of Ch. E. 112, 113, 109 f, s, and 123, or permission of instructor. Economic evaluation of chemical processes. Determination of investment and operating costs for chemical engineering plants. Effect of risk and taxation on profits from such plants. (Schroeder.)

Ch. E. 140. Introduction to Nuclear Technology. (2)

First and second semesters. Two lectures a week. Prerequisites, Math. 21 and Phys. 21. Required of students in Departments of Chemical Engineering, Electrical Engineering, and Mechanical Engineering. Engineering problems of the different parts of the nuclear energy complex, including basic theory, nuclear reactor design, and isotopic and chemical separations are discussed. The emphasis is on the nuclear fission reactor. This is an orientation course for those only generally interested in applied atomic energy. (Duffey.)

Ch. E. 142. Environmental Considerations of Nuclear Engineering. (3)

First semester. Three lectures a week. Prerequisite, permission of instructor. Engineering analysis of protection of the public and the environment from the hazards of nuclear energy operations. Emphasis is on the handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases are included. Typical problems encountered from mining of ores through nuclear reactor operations and chemical separations are considered. Legislative and economic factors, site selection, plant design and operation as related to the environment are discussed. (Silverman.)

Ch. E. 145. Applications of Differential Equations and Statistics in Chemical Engineering. (3)

Second semester. One lecture, two laboratory periods per week. Prerequisites, Ch. E. 103, f, s, Ch. E. 116, or permission of the instructor. (Gomezplata.)

Ch. E. 148. Nuclear Technology Laboratory. (2 to 4)

One or two lectures, and one or two laboratory periods a week. Prerequisites, Chem.

Chemical Engineering

3, Phys. 21, Math. 21, Ch. E. 140, or equivalents, and permission of instructor. Laboratory fee, \$8.00 per semester. Laboratory operations of equipment demonstrating techniques of detecting and making measurements of nuclear or high energy radiation. Radiation safety experiments are included. Both a sub-critical reactor and the 10-KW swimming pool critical reactor are used occasionally as a source of radiation. (Silverman.)

For Graduates

Ch. E. 201. *Graduate Unit Operations.* (5)

First semester. One-hour conference, three or more laboratory periods a week. Prerequisite, permission of the Department of Chemical Engineering. Laboratory fee, \$8.00. Advanced theoretical treatment of typical unit operations in chemical engineering. Problems. Laboratory operation of small scale semi-commercial units with supplemental reading, conferences and reports. (Bonney.)

Ch. E. 202. *Gas Analysis.* (3)

One semester. One lecture and two laboratory periods a week. Prerequisite, permission of Department of Chemical Engineering. Laboratory fee, \$8.00. Quantitative determination of common gases, fuel gases, gaseous vapors, and important gaseous impurities. Problems. (Bonney.)

Ch. E. 203. *Graduate Seminar.* (1)

One hour a week. Required of all graduate students in chemical engineering. The content of this course is constantly changing so a student may receive a number of credits by re-registration. Students prepare reports on current problems in chemical engineering and participate in the discussion of such reports. (Staff.)

Ch. E. 207, f, s. *Advanced Plant Design Studies.* (3, 4)

Three conference hours a week. Prerequisite, permission of Department of Chemical Engineering. (Schroeder.)

Ch. E. 209, f, s. *Plant Design Studies Laboratory.* (3, 3)

Three laboratory periods a week. Prerequisite, permission of Department of Chemical Engineering. Laboratory fee, \$8.00 per semester. (Bonney.)

Ch. E. 210, f, s. *Gaseous Fuels.* (2, 2)

Two hours a week. Prerequisite, permission of Department of Chemical Engineering. An advanced treatment of some of the underlying scientific principles involved in the production, transmission and utilization of gaseous fuels. Problems in design and selection of equipment.

Ch. E. 214. *Corrosion and Metal Protection.* (4)

Second semester. Four lecture hours a week. Prerequisite, Ch. E. 114 or Chem. 189 or Chem. 190 or consent of the instructor. The subjects to be covered include: theories of corrosion of ferrous and non-ferrous metals, passive films, corrosion inhibitors, metal cleaning, stress corrosion, corrosive chemicals, electrolytic protection, restoration of ancient bronzes, organic coatings, metal coloring, parkerizing, hot dip coatings, plated coatings, and selection of engineering materials.

Ch. E. 216. *Unit Processes of Organic Technology.* (3)

Second semester. Three lectures a week. Prerequisite, permission of the Department of Chemical Engineering. This course coordinates the study of fundamental principles of organic synthesis with the requirements of the industrial plant. (Bonney.)

Ch. E. 217. Unit Processes of Organic Technology Laboratory. (2)

Second semester. Two or more laboratory periods a week. Prerequisite, permission of the Department. Laboratory fee, \$8.00 per semester. Pilot plant operation of processes such as halogenation, hydration, nitration, oxidation, reduction and sulfonation. (Bonney.)

Ch. E. 240, 241. Advanced Heat and Mass Transfer. (6)

First and second semesters. Elective of graduate students in chemical engineering and others. Prerequisite, permission of the Department of Chemical Engineering. The technical and scientific elements of the mathematical theory of heat and mass transfer. (Gomezplata.)

Ch. E. 250. Chemical Engineering Practice. (6)

Four hours conference and forty hours per week of work in laboratory and plant for eight weeks. Prerequisite, permission of the Department of Chemical Engineering. Not offered 1961-62.

Ch. E. 270. Plastics Technology. (3)

First semester. Two lectures and one laboratory a week. Prerequisite, permission of the Department of Chemical Engineering. Laboratory fee, \$8.00 per semester.

Ch. E. 280, 281. Graduate Chemical Engineering Thermodynamics. (3, 3)

First and second semesters. Prerequisites Ch. E. 109, f, s, Ch. E. 116 or permission of instructor. Advanced studies of the applications of the principles of engineering and chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering. (Bonney.)

Ch. E. 290. Chemical Engineering Process Kinetics. (3)

First semester. Three lectures a week. Prerequisite, permission of instructor. Methods of application of kinetic data to the design of reactors for industrially important processes are illustrated by solution of typical problems. Treatments for both homogeneous and heterogeneous reactions are given. (Gomezplata.)

Ch. E. 301. Seminar in Nuclear Engineering. (1)

First and second semesters, one meeting a week. Survey of nuclear engineering literature, and oral presentation of prepared reports. Since the content of this course is changing, a student may receive a number of credits by re-registration. (Duffey, Silverman.)

Ch. E. 302, 303. Nuclear Reactor Engineering. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, permission of instructor. The engineering problems of the design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, and control, etc. Emphasis is toward commercial nuclear reactors. (Duffey.)

Ch. E. 305. Sub-critical Nuclear Reactor Laboratory. (3)

One lecture, two laboratory periods a week. Prerequisites, Ch. E. 148, 302, 303 or equivalents and permission of instructor. Laboratory fee, \$8.00 per semester. Experimental work with the sub-critical nuclear reactor. The appropriate radiation detection equipment is used. Experiments, such as multiplication factors, neutron flux distribution and neutron activation are carried out. (Duffey.)

Ch. E. 308, 309. Nuclear Reactor Laboratory. (4, 4)

Two lectures and two laboratory periods a week. Prerequisites, permission of instructor, Ch. E 148, 302, 303, 305, or equivalent. Laboratory fee \$10.00 per semester.

Chemical Engineering

Experiments demonstrating the techniques of using a critical nuclear reactor for research and development work as well as for industrial operations are performed. The University of Maryland 10-KW swimming pool reactor is employed. Experiments on reactor startup and operation, shielding, control, neutron flux distributions, neutron and gamma spectrum, cross section measurements are included. Experiments will include practice with a nuclear reactor simulator. (Duffey.)

Ch. E. 311, 312, *Nuclear Separation Engineering*. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, permission of instructor. Application of chemical engineering to the chemical and isotopic separations necessary for nuclear reactor operation. These separations include (1) processing of uranium, thorium, and other ores; (2) chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors; (3) treatment of radioactive wastes; (4) isotopic separation of U235; and (5) isotopic separation of heavy water and other desired materials. Ch. E. 311 concerns primarily chemical separations, while Ch. E. 312 concerns mostly isotopic separations and fuel cycles. Ch. E. 311 is not necessarily a prerequisite for Ch. E. 312. (Silverman.)

Ch. E. 313. *Selected Topics in Nuclear Engineering*. (2)

Two lectures a week. Prerequisite, permission of instructor. Topics of current interest and recent advances in the nuclear engineering field. Because of the rapid advances in the field, information on special topics of much practical importance is continually becoming available. Such information will be presented in this course. Since the content changes, re-registration may be permitted. (Duffey, Silverman.)

Ch. E. 314. *Special Problems in Nuclear Engineering*.

Credit hours to be arranged. Prerequisite, consent of instructor. Laboratory fee, \$10.00 per semester. Research or special study. This is for individual projects on a graduate level. (Staff.)

Ch. E. 315, 316. *Non-Power Uses of Nuclear or High Energy Radiation*. (2, 2)

Second semester. Two lectures a week. Prerequisite, permission of instructor. An engineering survey of the current applications and those under development. Included are such uses of radiation as synthesizing chemicals, preserving foods, control of industrial processes. Design of irradiation installations, e.g. cobalt 60 gamma ray sources, electronuclear machine arrangements, and specially built nuclear reactors are considered. (Silverman.)

Ch. E. 320, 321. *Advanced Nuclear Reactor Theory*. (2, 2)

First and second semesters. Two lectures a week. Prerequisites, Ch. E. 302, 303, year of advanced calculus, and permission of instructor. The theory of the calculation of critical masses, neutron flux distribution, neutron energy spectrum, kinetics of reactor behavior and gamma ray attenuation are presented. Multigroup treatment of reflected reactors, solution of the transport equations, perturbation theory, and other advanced calculation techniques are included. (Duffey.)

Ch. E. 399. *Research in Chemical Engineering. Research in Nuclear Engineering*.

Credit hours to be arranged. Laboratory fee, \$8.00 per semester (Research in Chemical Engineering). Laboratory fee, \$10.00 per semester (Research in Nuclear Engineering). The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. (Staff.)

METALLURGY

Met. 23. Nonferrous and Ferrous Metallurgy. (3)

Second semester. Three lectures and demonstrations a week. Prerequisite, Chem. 3. The methods of extraction of the important metals and their fabrication. (Pennington.)

Met. 68, 70. Mechanical Properties of Metals. (3, 3)

First and second semesters. Two lectures and one laboratory a week. Prerequisites, Math. 21 and Phys. 21. Laboratory fee, \$8.00. Introduction to metal forming operations, ingot casting, forging, rolling; power metallurgy; metal tests, tensile, impact, creep, fatigue, hardness. (Pennington.)

For Advanced Undergraduates and Graduates

Met. 104. Senior Metallurgical Seminar. (1, 1)

One hour a week. Students prepare reports on current problems in metallurgy and participate in the discussion of such reports. The content of this course is constantly changing so a student may receive a number of credits by re-registration. (McWilliams.)

Met. 150, 151. Physical Metallurgy. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 21 and Phys. 21. States of matter, physical structure of gases, liquids and solids; physical structure and constitution of metals; properties as related to atomic structures; x-ray and crystal structure effect of mechanical working, heat treatment and composition; constitution and properties of alloy systems; phase transformation and diffusion theory; casting, shaping, welding, and testing metal objects. (Pennington.)

Met. 152, 153. Physical Metallurgy Laboratory. (2, 2)

First and second semesters. Two three-hour laboratories per week. Prerequisites, Math. 21, Phys. 21, Met. 150, 151 (may be taken concurrently). Laboratory fee, \$8.00 per semester. These courses are associated with Met. 150, 151, but are not required with the lecture courses except in the case of metallurgy majors. (McWilliams.)

Met. 164, 166. Thermodynamics of Metallurgical Processes. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190. The application of the principles of thermodynamics to metallurgical systems with emphasis on steel making; laws of chemical reactions; materials and reactions in steel making processes; applications of theory to steel making; applications of theory of selected non-ferrous systems. (Pennington.)

Met. 168, 170. Metallurgical Investigations. (2, 4)

First semester. Two three-hour laboratory periods a week. Second semester. Three lectures and one three-hour laboratory period a week. Prerequisites, concurrent registration in or completion of Met. 182, 183. Laboratory fee, \$8.00 per semester. A study of the basic metals industry in which typical metallurgical processes in plant installations are considered in some detail. Class and individual assignments involving laboratory work and literature reviews. (Pennington, McWilliams.)

Met. 172. Light Metals and Alloys. (2)

First semester. Two lectures a week. Prerequisites, Met. 150, 151. The physical metallurgy of aluminum, magnesium, titanium, and their alloys. Discussion of the classic researches that have determined the course of thinking regarding such metals and alloys. Pertinent phase diagrams of industrial importance to light alloys. The special metallurgical processes influencing the fabrication and use of light alloys. (Loring.)

Metallurgy

Met. 182, 183. Optical and X-ray Metallography. (4, 4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, Met. 150, 151 or permission of instructor. Laboratory fee, \$8.00 per semester. The application at an advanced level of the principles of metallography, with emphasis on the correlation of associated test procedures; constitution of metal systems and phase transformations; alloy steels; hardenability and tempering of quenched steels. (Kruger.)

Met. 188, 189. Alloy Steels I, II. (2, 2)

First and second semesters. Two lectures per week. Prerequisites, graduate or undergraduate standing. (Met. 188 is not prerequisite to Met. 189.) Recent advances in the physical metallurgy of steel; ferrite, cementite, and austenite; the isothermal transformation of austenite; decomposition of austenite by continuous cooling; the effects of various metallurgical treatments on the mechanical properties of steels. The properties of quenched and tempered steels; importance of hardenability in engineering applications; calculation of hardenability; variables affecting hardenability; intensifiers; effects of alloying elements on the mechanical properties of steels; efficient use of alloying elements in steel. (Loring.)

For Graduates

Met. 220, 221. Solid Phase Reactions. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190; Met. 182, 183; or permission of the instructor. The application of thermodynamics to the study of phase equilibria and transformations in metals; mechanism and rate determining factors in solid phase reactions in metals; order-disorder phenomena, diffusion processes, nucleation theory, precipitation from solid solution, eutectoid decomposition. (Moore.)

Met. 224, 225. Advanced X-ray Metallography. (3, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Math. 114, 115; Met. 182, 183. Laboratory fee, \$8.00 per semester. Analysis of crystallography or martensite reactions, and transformations in general; analysis of complex diffracting systems.

Met. 228. Seminar in Metallurgy. (1)

First and second semesters. One meeting a week. Required of graduate students in metallurgical curriculum. Survey of metals literature, and oral presentation of prepared reports. The content of this course is constantly changing, so a student may receive a number of credits by re-registration. (Pennington.)

Met. 229. Gases in Metals. (2)

Second semester. Two lectures per week. Prerequisites, Met. 182, 183, or permission of the instructor. A consideration of the behavior of gases in metals with emphasis on the action of hydrogen in solid metals. (Pennington.)

Met. 230, 231. Mechanical Metallurgy. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 114, 115; Met. 182, 183. Theory of plastic flow and rupture of polycrystalline metals; the influence of combined stresses, rate of deformation and temperature variation on the flow and rupture of metals. Flow and fracture in single crystals; theoretical crystal plasticity, theory of failure, recovery, recrystallization, and texture formation. (Moore.)

Met. 232, 233. Advanced Physical Metallurgy. (3, 3)

First and second semesters. Three lectures a week. Required of graduate students

in metallurgical curriculum. The principles of X-ray metallography; the atomic theory of metals; magnetic materials; phase equilibria; review of important binary and ternary systems; diffusion and transformations in the solid state. (Moore.)

Met. 238. Metallurgy of Nuclear Reactor Materials I. (2)

First semester. Two lectures a week. Prerequisites, Met. 150-151. Theory and practice relating to metals such as uranium, thorium, and plutonium. The preparation of such metals in their purest state for use in nuclear reactors. The physical, metallurgical and mechanical characteristics of fissionable metals, their melting, casting, fabrication, and heat treatment. The alloys of uranium, thorium, and plutonium. Theoretical considerations and precautions in their preparation, investigation and use. Discussion of phase diagrams of nuclear alloy systems. (Loring.)

Met. 239. Metallurgy of Nuclear Reactor Materials II. (2)

Second semester. Two lectures a week. Prerequisite, Met. 238. Theory and practice of nuclear metals used in reactors including structural materials such as beryllium and zirconium, and metals used for transfer of heat such as sodium, bismuth, and various low melting alloys. Discussion of pertinent phase diagrams. Radiation damage, mass transfer, and other specialized effects. (Loring.)

Met. 399. Research in Metallurgy

Credit hours to be arranged. Laboratory fee, \$8.00 per semester. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. (Pennington.)

CIVIL ENGINEERING

Professors: LOONEY, ALLEN, LEPPER, MAVIS AND OTTS.

Associate Professors: BARBER, COURNYN, GOHR, PIPER AND WEDDING.

Instructors: GARBER, KRIZEK, SCHLIMM AND VINER.

Lecturers: BLOEM, ROBERTS AND WALKER.

C.E. 24. Dynamics. (3)

Required of juniors in civil engineering. Prerequisites, C.E. 23, (or E.S. 20) Math. 21 and Phys. 21. Moments of inertia of areas and masses. Principles of dynamics; motion of a particle; translation and rotation of a rigid body; plane motion. Principles of work and energy; impact forces on structural and machine members; impulse and momentum; simple mechanical vibrations. (Garber.)

C.E. 30. Materials of Engineering. (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Math. 21, concurrent registration in C.E. 23 (or E.S. 20) and Phys. 21. Properties and constitution of the principal materials used in civil engineering; laboratory tests for these properties; interpretation of test results and of specifications. (Wedding.)

For Advanced Undergraduates and Graduates

C.E. 100. Seminar. (3)

Second semester. Two lectures each week (75 mins.). Prerequisite Math 64 or

NOTE.—See *Engineering Sciences* the courses which supersede C.E. 20, C.E. 21, C.E. 22, and C.E. 23.

Civil Engineering

concurrent registration. Numerical methods in engineering and programming for digital computers. Errors, interpolations, series, integration, iteration and solutions of equations. (Looney, Garber.)

C.E. 101. *Civil Engineering Planning.* (3)

First and second semesters. One lecture and two laboratories each week. For second semester seniors in civil engineering. Modern planning and layout of engineering projects, such as industrial plants, transportation facilities, municipal improvements, housing and urban developments. Construction, specifications, contracts, and costs. (Piper.)

C.E. 110. *Surveying I.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, junior standing. Principles and methods of making plane and topographic surveys. Use, care and adjustment of instruments. Consistent accuracy and systematic procedures in field work, computation, and mapping are emphasized for obtaining desired objectives. (Gohr.)

C.E. 111. *Surveying II.* (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 110. A continuation of C.E. 110 with emphasis on elementary problems of obtaining essential field data preliminary to design and locating points, lines and grades for selected engineering construction. (Gohr.)

C.E. 112. *Photogrammetry.* (2)

First semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 110. The fundamental principles of terrestrial and aerial photographic surveying and their application to principles of map making. Laboratory exercises in the use of the stereoscope, stereocomparagraph, contour finder, interpretometer, and the vertical sketchmaster. (Gohr.)

C.E. 121, 122. *Advanced Strength of Materials.* (3, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, C.E. 23 (or E.S. 20) and 30 and senior standing. Strength and deformation of deformable bodies. Unsymmetrical bending, buckling, combined stresses and torsion. Application of experimental data on materials to design problems. Correlation of analytical and experimental methods of analysis with design. Electrical strain gages, photoelasticity, brittle lacquer methods and various analogies. (Lepper, Wedding.)

C.E. 140. *Fluid Mechanics.* (3)

First semester. Three lectures each week and required laboratory. Prerequisites, Math. 21; concurrent registration in C.E. 23 (or E.S. 20) and Phys. 21. Required of juniors in civil engineering. A rational and experimental study of fluids at rest and in motion with special emphasis on water and oils. Principles of viscous and turbulent flow through pipes, orifices, nozzles and metering devices; impulse and momentum concepts. Flow through closed conduits and open channels; divided flow, pumps, turbines, dimensional analysis; laws of similarity. (Cournyn, Staff.)

C.E. 141. *Fluid Mechanics.* (3)

First and second semesters. Three lectures per week. Prerequisite, C.E. 20 or (E.S. 21) or equivalent. Similar to C.E. 140, but with demonstration lectures replacing the laboratory work, for juniors in electrical engineering and fire protection. (Cournyn.)

C.E. 142. *Advanced Fluid Mechanics.* (3)

First semester. Three lectures a week. Prerequisites, C.E. 24 (or E.S. 21), C.E. 140

and Math. 64. Advanced topics in fluid mechanics and related fields of hydrology, hydraulic similitude, ground water and seepage. Special research projects. (Cournyn.)

C.E. 150. Soil Mechanics. (4)

First semester. Three lectures and one laboratory period each week. Prerequisites, C.E. 24 (or E.S. 21) and C.E. 30. Introductory study of the mechanics of aggregations and its application to earthwork and foundations. Engineering geology relative to civil engineering and soil mechanics. (Barber.)

C.E. 160. Structural Design. (4)

Second semester. Three lectures and one laboratory period each week. Prerequisites, C.E. 23 (or E.S. 20) and C.E. 30; concurrent registration in C.E. 30 permitted. Analysis and design of buildings, bridges and other civil engineering structures in timber, concrete and steel. Layout of projects and arrangement and proportioning of members. Specifications and codes, construction methods as related to design. (Allen, Piper.)

C.E. 161. Structural Design. (4)

First semester. Three lectures and one laboratory period each week. Prerequisite, C.E. 160. Continuation of C.E. 160. Elementary indeterminate structures and advanced design problems. (Allen, Piper.)

C.E. 162. Structural Analysis. (3)

First semester. Two lectures per week. (75 min.) Prerequisites C.E. 160. Concurrent registration in C.E. 161. Analytical and graphical determination of dead-and live-load induced stresses in indeterminate structures. Influence lines Muller-Breslau's principle deflections moment areas, virtual work and moment distribution. (Looney Garber.)

C.E. 163. Structural Analysis. (3)

Second semester. Two lectures per week (75 min.). Prerequisites C.E. 162. Continuation of C.E. 162. Advanced analysis and design of indeterminate structures; the use of digital computers; structural dynamics earthquakes and vibrations. (Looney Garber.)

C.E. 170. Water Supply. (3)

First semester. Three lectures each week and required laboratory. Prerequisites, C.E. 140 and senior standing. Requirements of a municipal water supply—design, operation, maintenance, and administration. (Otts.)

C.E. 171. Sewerage. (4)

Second semester. Three lectures each week and required laboratory. Prerequisites, C.E. 140 and senior standing. The collection, treatment and disposal of sewage. (Otts.)

C.E. 180. Transportation. (3)

Second semester. Prerequisites, C.E. 23 (or E.S. 20), C.E. 30 and C.E. 110. Engineering problems of transportation by airways, highways, pipe-lines, railways and waterways. Elementary dynamics of traffic and functional considerations of routes and terminals. (Wedding.)

C.E. 181. Highways. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 150. Location, design, construction, and maintenance of roads and pavements. Laboratory problems and field inspection trips. (Barber.)

Civil Engineering

C.E. 199. *Research.* (3)

First and second semesters. Prerequisite, senior standing. A special course arranged to meet the needs of exceptionally well prepared students for special study in a particular field. (Staff.)

For Graduates

C.E. 221, 222. *Advanced Strength of Materials.* (3, 3)

First and second semesters. Prerequisites, C.E. 23 (or E.S. 20, 21) and 30 or equivalent. Analyses for stress and deformation in engineering members by the methods of mechanics of materials and elementary theories of elasticity and plasticity. Problems in flexure, torsion, plates and shells, stress concentrations, indeterminate combinations, residual stresses, stability. (Lepper.)

C.E. 223. *Experimental Stress Analysis.* (3)

Second semester. Prerequisite, C.E. 221 or permission of instructor. Experimental methods of stress and strain analysis for static and impact forces. Use of structural models; brittle and plastic material methods; analogies; photoelasticity; optical, mechanical and electrical strain gages and instrumentation. (Wedding.)

C.E. 224. *Advanced Engineering Materials Laboratory.* (3)

First or second semester. Prerequisite, C.E. 23 (or E.S. 20, 21) and 30, or equivalent. Critical examination of the methods for testing engineering materials and structures under static, repeated, sustained and impact forces. Laboratory experiments for the determination of strength and stiffness of structural alloys, concrete and other construction materials. Critical examination of the effects of test factors on the determination of engineering properties. (Lepper, Wedding.)

C.E. 225, 226. *Advanced Properties of Materials.* (3, 3)

First and second semesters. Prerequisites, C.E. 221 and 222. Modern theories of the structure of matter applied to the study of elastic and plastic deformation of materials under static, repeated, sustained and impact forces. Elements of solid state physics, crystal structure, slip and dislocation theory; polycrystalline solids. Effects of low and high temperature, loading rates, and state of stress on mechanical properties and fracture. Critical study of tests and their application to strength of members. (Lepper.)

C.E. 227, 228. *Theories of Concrete and Granular Materials.* (3, 3)

First and second semesters. Prerequisites, C.E. 221, 222 and 224. Critical reviews of analytical and experimental investigations of the behavior of concretes under diverse conditions of loading and environment. Mechanics of granular aggregates and the chemistry of cements. Theories for the design of Portland cement and asphaltic concrete mixtures. Relations between laboratory testing and field experience. (Wedding.)

C.E. 231, 232. *Theory of Concrete Mixtures I, II.* (3, 3)

Prerequisite, C.E. 30 or equivalent. Methods for the design of concrete mixtures, and a study of factors affecting the properties of the resulting concrete. (Wedding.)

C.E. 241. *Hydraulic Engineering.* (3)

Prerequisite, C.E. 140, 141 or equivalent. Water power and flood control. Analysis of the principal features of a water power project with special reference to reservoir, waterway, dam, plant accessories, and power house equipment. Complete report on a water power project required, including costs and power valuation. (Courdyn.)

C.E. 251. *Soil Mechanics.* (3)

Prerequisites, C.E. 150, or equivalent.

(Barber.)

C.E. 252. Advanced Foundations. (3)

Prerequisites, C.E. 150, 162 and 163, or equivalent.

(Barber.)

C.E. 261. Civil Engineering Planning. (3)

First semester. Prerequisites, C.E. 160, 161, 162 and 163, or equivalent. General planning of large engineering projects involving industrial plants, bridges, highways, railroads, and port developments. Emphasis on general planning followed by design construction and cost estimates.

(Looney, Piper.)

C.E. 262. Civil Engineering Planning. (3)

Second semester. Prerequisite, C.E. 261. City and regional planning and development. Special problems of municipal development. Emphasis on preparing engineering reports, financing and cost estimates. Preparation of presentation to public bodies.

(Looney, Piper.)

C.E. 263. Theory of Structural Design. (3)

First semester. Prerequisite, C.E. 160, 161, 162 and 163, or equivalent. Advanced structural theory applied to the design of bridges and buildings. Methods of analysis for indeterminate structures, including moment distribution, Maxwell's method, virtual work, reciprocal theory, Muller Breslau's principle, and classical analytical methods.

(Looney.)

C.E. 264. Theory of Structural Design. (3)

Second semester. Prerequisite, C.E. 263. Correlation of theory, experience, and experiments in study of structural behavior, proportioning, and preliminary design. Special design problems of fatigue, buckling, vibrations, and impact.

(Looney.)

C.E. 265, 266. Concrete Structures. (3, 3)

First and second semesters. Prerequisites, C.E. 263 and 264. Examination of the fundamental basis for the design of reinforced concrete structures. Correlation of laboratory research, advanced structural theory and mechanics and design methods. Application to the design of modern forms of concrete structures, such as folded plates, slabs, thin shells, lift slabs, prestressing, and precasting.

(Looney.)

C.E. 267, 268. Steel Structures. (3, 3)

First and second semesters. Prerequisites, C.E. 263 and 264. Design of large steel structures, such as cantilever and continuous trusses and girders, steel arches, suspension bridges, and tall building frames. Special problems of secondary stresses, wind bracing, stability and bracing, and interaction and deformation stresses. Study of specifications, factor of safety and ultimate strength, and the relation between structural tests and design.

(Looney)

C.E. 271, 272. Sanitary Engineering Design. (3, 3)

First and second semesters. Prerequisites, C.E. 170 and 171, or equivalent. Practical problems in the design of sewer systems and appurtenances; sewage treatment plants; water collection and distribution systems; water purification plants. Selected design of structures related to the operation of water supply and sewerage systems and industrial waste treatment plants.

(Otts.)

C.E. 281, 282. Advanced Highway Engineering. (3, 3)

First and second semesters. Prerequisites, C.E. 150, 180 and 181, or equivalent. Reconnaissance and location, surveys and plans, drainage, subgrade structure, low-cost roads, base courses, flexible and rigid pavement design. Highway organization, planning, economy, and finance. Geometric design and traffic engineering.

(Barber)

Electrical Engineering

C.E. 298. Seminar.

First or second semester. Credit in accordance with work outlined by the Department.
Prerequisite, consent of the Department of Civil Engineering. (Staff.)

C.E. 399. Research.

Credit in accordance with work done. (Staff.)

ELECTRICAL ENGINEERING

Professors: CORCORAN, REED, WAGNER AND WEBER.

Associate Professors: PRICE, RUTELLI, SIMONS, AND SMALL.

Assistant Professor: HOCHULI.

Instructors: GINNINGS, GLOCK, HAHN, JONES, LARSON, THOMPSON AND RUMBAUGH.

Lecturers: CHU, FREEMAN, SCHULMAN, VANDERSLICE, BEACH, HORTON, KATZIN,
OHMAN, SCHUCHARD, TRENT AND WATTERS.

E. E. 1. Basic Electrical Engineering. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisites, Math. 21 and Phys. 21 or concurrent registration. Laboratory fee, \$4.00. Required of sophomores in electrical engineering. Basic concepts of electric potential, current, power, and energy; d-c circuit analysis by the mesh-current and nodal methods; network theorems; magnetic field concepts; magnetic effects of engineering importance.
(Corcoran, Thompson, Rumbaugh.)

For Advanced Undergraduates

E. E. 50. Fundamentals of Electrical Engineering. (3)

First semester. Three lectures a week. Prerequisites, Math. 21 and Phys. 21. Required of juniors in civil engineering. Principles of direct and alternating currents; power circuits and distribution systems; direct and alternating current machines and applications; introduction to electronic devices. (Jones.)

E. E. 51, 52. Principles of Electrical Engineering. (4, 4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, Math. 21 and Phys. 21. Laboratory fee, \$4.00. Required of juniors in aeronautical and mechanical engineering, and seniors in chemical engineering. A study of alternating-current circuits, polyphase circuits; magnetic circuits. Study of vacuum tubes operated as rectifiers and amplifiers. (Small, Hochuli.)

E. E. 60. Electricity and Magnetism. (3)

First semester. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Electromagnetism as applied to electrical engineering; electric field theory with emphasis on capacitance calculations, magnetic field theory with emphasis on inductance calculations. Uses vector notation. (Reed, Weber.)

E. E. 65. Direct-Current Machinery. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Laboratory fee, \$4.00. Required of juniors in electrical engineering. Construction theory of operation, and performance characteristics of direct-current generators, motors, and control apparatus. Experiments on the operation and characteristics of direct-current generators and motors. (Glock, Jones.)

For Advanced Undergraduates and Graduates

E. E. 100. Alternating-Current Circuits. (4)

First semester. Three lectures and one laboratory period a week. Prerequisites, "C" average (by courses) in Math. 20-21, Phys. 20-21, and EE. 1. Laboratory fee, \$4.00. Required of juniors in electrical engineering. Single- and polyphase-circuit analysis under sinusoidal and non-sinusoidal conditions of operation. Mesh-current and nodal methods of analysis. Harmonic analysis by the Fourier series method. Theory and design of tuned coupled circuits. (Price, Simons.)

E. E. 101. Engineering Electronics. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisite, E. E. 100. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Theory and applications of electron tubes and associated circuits with emphasis on equivalent-circuit and graphical analysis of audio amplifiers; theory of feedback amplifiers. (Price, Simons.)

E. E. 102. Alternating-Current Machinery. (4)

First semester. Three lectures and one laboratory period a week. Prerequisites, E.E. 65 and E.E. 100. Required of seniors in electrical engineering. Laboratory fee, \$4.00. The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and polyphase transformers; three-phase induction generators and motors; single-phase induction motors. (Reed, Jones.)

E. E. 103. Engineering Analysis. (2)

First semester. Two lectures a week. Prerequisite, E. E. 1. Analysis of physical systems with emphasis on the selection and application of appropriate mathematical methods; elements of probability and statistics. (Staff.)

E. E. 104. Communications. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 60 and E. E. 100. Required of juniors in electrical engineering. Long-line theory applied to audio-frequency and ultra-high-frequency systems. Elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation; elements of rectangular wave-guide theory. (Reed, Simons.)

E. E. 105, 106. Radio Engineering. (4, 4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, E. E. 101, E. E. 105. Laboratory fee, \$4.00. Required of seniors in electrical engineering. Characteristics of radio-frequency circuits including the design of tuned couple circuits and Class C amplifiers. Amplification, oscillation, modulation, and detection with particular emphasis on radio-frequency amplification and broadcast-range reception. Elements of wave propagation and antenna systems. (Wagner, Price, Rutelli.)

E. E. 107. Electrical Measurements. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisites, E. E. 100 and Math. 64. Laboratory fee, \$4.00. Measurement and calibration techniques employing ballistic galvanometers, potentiometers, bridges, electromagnetic and cathode-ray oscillographs, watt-hour meters, and electronic instruments. (Thompson.)

E. E. 108. Electric Transients. (3)

First semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Required

Electrical Engineering

of seniors in electrical engineering. Current, voltage, and power transients in lumped-parameter networks. Introduction and utilization of Laplace transforms.

(Price, Simons.)

E. E. 109. *Pulse Techniques*. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 108, Math. 64. Required of seniors in electrical engineering. Generation, shaping, amplification, and delay of non-sinusoidal wave-forms. Circuit design techniques and application to radar, television, and computers.

(Simons, Schulman.)

E. E. 110. *Transistor Circuitry*. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 101. P-n junction theory; point-contact and junction type transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits.

(Simons.)

E. E. 114. *Applied Electronics*. (3)

First and second semesters. Three lectures a week. Prerequisite, E. E. 101. Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments.

(Staff.)

E. E. 115. *Feedback Control Systems*. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 101 and E. E. 108. Servomechanisms and automatic regulators; investigations of electric, hydraulic, pneumatic, and mechanical elements; analysis of system differential equations and development of transfer functions; stability criteria.

(Price.)

E. E. 116. *Feedback Control Systems Laboratory*. (1)

Second semester. One laboratory period a week. Prerequisite, E. E. 115 or concurrent registration in E. E. 115. Laboratory fee, \$4.00. Laboratory exercises involving some of the basic concepts of feedback control systems.

E. E. 117. *Power Transmission and Distribution*. (3)

First semester. Three lectures a week. Prerequisite, concurrent registration in E. E. 102. Inductance and capacitance calculations of polyphase transmission lines on a per wire basis; effective resistance calculations and depth-of-penetration formula; generalized parameters of four-terminal networks and long-line theory applied to power distribution systems; use of transmission line charts.

(Reed.)

E. E. 120. *Electromagnetic Waves*. (3)

Second semester. Three lectures a week. Prerequisite, Math. 64, senior standing in electrical engineering or physics. The basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission; propagation in space.

(Reed.)

E. E. 130. *Electronic Analog Computers*. (3)

First semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the analog type. Analog computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators.

(Chu.)

E. E. 131. *Electronic Digital Computers*. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the digital type. Digital computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units.

(Chu.)

E. E. 160, 161. Vacuum Tubes. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, Math. 64, senior standing in electrical engineering or physics. Electron emission; laws of electron motion; space charge effects; noise in vacuum tubes; magnetic lenses; klystrons; magnetrons; photoelectric tubes; other special-purpose tubes. (Weber.)

For Graduates

E. E. 200. Symmetrical Components. (3)

First semester. Three lectures a week. Prerequisite, E. E. 102. Application of the method of symmetrical components to synchronous generators, transmission lines, transformers, static loads possessing mutual coupling, and induction motor loads. Methods of calculating positive, negative, and zero sequence reactances, of transmission lines. Complete network solutions in terms of symmetrical components and comparison of these solutions with those obtained by classical methods. Methods of measuring positive, negative, and zero sequence reactances of synchronous generators. (Reed.)

E. E. 201. Electromagnetic Theory. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 120 or E. E. 215. Theoretical analysis and engineering applications of Laplace's, Poissons and Maxwell's equations. (Weber.)

E. E. 202, 203. Transients in Linear Systems. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. Operational circuit analysis; the Fourier integral; transient analysis of electrical and mechanical systems and vacuum tube circuits by the Laplace transform method. (Wagner.)

E. E. 206, 207. Microwave Engineering. (3, 3)

First and second semesters. Three lectures a week first semester and two lectures and one laboratory period a week second semester. Prerequisite, E. E. 201 or E. E. 216. Laboratory fee, E.E. 207, second semester, \$4.00. Basic considerations in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high-frequency oscillators and tubes, radiation engineering. (Weber.)

E. E. 209. Stability in Power Systems. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 200. An extension of symmetrical components. E. E. 200, as applied to power systems; study of the stability problem; the swing equation and its solution; the equal-area and Rouths criteria for stability; solutions of faulted three-phase networks; system design. (Reed.)

E. E. 212, 213. Servomechanism. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.). The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied. (Price.)

E. E. 215, 216. Radio Wave Propagation. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. Maxwell's wave equation; concept

Electrical Engineering

of retarded magnetic vector potential; propagation over plane earth; propagation over spherical earth; refraction; meteorological effects; complex antennas; air-to-air propagation; lobe modulation. (Reed, Rutelli.)

E. E. 218, 219. *Signal Analysis and Noise.* (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. Fourier series and integrals; phase and frequency modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise. (Freeman.)

E. E. 220, 221. *Theory of Communication.* (3, 3)

First and second semesters. Three lectures a week. Prerequisite, E. E. 219. Measure of information and channel capacity; methods of describing random signals and circuit analysis involving those signals. The statistical theory of communication systems. Systems which are statistically optimum. (Weber, Hogan.)

E. E. 222. *Graduate Seminar.* (1-3)

Second semester. Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Seminars are held on topics such as micro-wave engineering, radiation engineering, non-linear circuit analysis, tensor analysis, and other topics of current interest. Since the subject matter is continually changing, a student may receive a number of credits by re-registration. (Corcoran, Reed, Weber, and Wagner.)

E. E. 230. *Mathematics of Circuit Analysis.* (3)

First semester. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. The mathematics of circuit analysis, including determinants, matrices, complex variable, and the Fourier integral. (Vanderslice.)

E. E. 231. *Active Network Analysis.* (3)

Second semester. Three lectures a week. Prerequisite, E. E. 230. The complex frequency plane; conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquists and Routh's criteria for stability. (Corcoran, Vanderslice.)

E. E. 232, 233. *Network Synthesis.* (3, 3)

First and second semesters. Three lectures a week. Prerequisite, E. E. 231 or equivalent. Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams; physical network characteristics, including relations existing between the real and imaginary components of network functions; modern methods of network synthesis. (Vanderslice.)

E. E. 235. *Applications of Tensor Analysis.* (3)

First semester. Three lectures a week. Prerequisite, E. E. 202 or E. E. 230. The mathematical background of tensor notation which is applicable to electrical engineering problems. Applications of tensor analysis to electric circuit theory and to field theory. (Wagner.)

E. E. 399. *Electrical Engineering Research.*

Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 399 are required of M.S. degree candidates and a minimum of eighteen semester hours is required of Ph.D. candidates. A thesis covering an approved research problem and written in conformity with the regulations of the Graduate School is a partial

requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering. (Graduate Staff.)

ENGINEERING SCIENCES

E. S. 1. Engineering Graphics. (3)

First and second semesters. One lecture and two laboratory periods a week. Prerequisites: Math 1 (or concurrent registration in Math. 18). Elements of graphic communication and analysis, orthographic projection, auxiliary views, descriptive geometry. Technical sketching and lettering. Simplified conventions. (Wockenfuss and staff.)

E. S. 10. Introductory Mechanics. (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites: Math. 19 (or concurrent registration in Math. 19) and E.S. 1. Free-body Diagrams. Numerical, graphical and vectorial computation applied to elementary problems in statics. Areas, volumes; statical moments, moments of inertia; centroids, radii of gyration. (Hayleck, Lepper, and staff.)

E. S. 20. Mechanics of Materials. (3)

First and second semesters. Three lectures a week. Prerequisites: Math. 20, Phys. 20 (or concurrent registration in Math. 20, Phys. 20) and E.S. 10. Distortion of engineering materials in relation to changes in stress or temperature. Geometry of internal strain and external displacement. Elementary application to beams, columns, shafts, tanks, trusses, and connections. (Hayleck, Lepper, and staff.)

E. S. 21. Dynamics. (3)

First and second semesters. Three lectures a week. Prerequisites: Math. 21, Phys. 21 (or concurrent registration in Math. 21 and Phys. 21) and E. S. 10. Dynamics of particles and rigid bodies. Principles of work and energy; impulse and momentum. Applications to elementary engineering problems. (Lepper, Hayleck, and staff.)

MECHANICAL ENGINEERING

Professors: SHREEVE, JACKSON AND R. W. ALLEN.

Associate Professors: HAYLECK, EYLER, WOCKENFUSS AND SAYRE.

Assistant Professors: CATHER AND ELKINS.

Instructors: SHUPLING, LLOYD, MARKS, WISE, OETTING, GLASS, JOHN, WARD, MCAULIFFE AND YANG

Lecturer: HABERMAN AND SEIGEL.

For Undergraduates

M.E. 20, 21. Manufacturing Tools and Processes. (1, 1)

First and second semesters. Laboratory fee, each semester, \$3.00. A study of tools and methods used in industry to fabricate materials of engineering. One combination

NOTE—E.S. 1 supersedes Dr. 1, 2; E.S. 10 supersedes C.E. 20, C.E. 21, and M.E. 22; E.S. 20 supersedes C.E. 22, C.E. 23, and M.E. 23. In 1961-1962 students will schedule either (a) E.S. 21 or (b) C.E. 24 or M.E. 24.

Mechanical Engineering

lecture and laboratory period a week. Machine tools and processes, casting and forming processes, welding and allied processes, and related fabricating techniques and processes. (Wockenfuss and staff.)

M.E. 24. Dynamics. (3)

First semester. Three lectures a week. Prerequisites, Math. 21, Phys. 21, or taken concurrently. Accelerated motion of particles, bodies, and machine parts. D'Alembert's principle, equations of motion and their solution. Methods of momentum, impulse, energy, balancing, introduction to vibrations. (Hayleck, Staff.)

For Advanced Undergraduates and Graduates

M.E. 100. Thermodynamics. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, Phys. 20, Math. 21, concurrently. Required of juniors in mechanical and aeronautical engineering. The properties, characteristics, and fundamental equations of gases, and vapors. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors. (Eyler, Sayre.)

M.E. 101. Heat Transfer. (3)

Second semester. Three lectures a week. Prerequisites, M.E. 100, M.E. 102 concurrently. Basic principles of heat transfer, including a study of conduction by steady state and variable heat flow; free and forced convection, radiation, evaporation and condensation of vapors, and the application of the principles of heat transfer to design problems. (Eyler.)

M.E. 102. Fluid Mechanics. (3)

Second semester. Two lectures and one laboratory a week. Prerequisites, M.E. 100. Laboratory fee, \$3.00. Fluid statics, Bernoulli's equation, principles of impulse and momentum, analysis, measurements of flow and fluid properties, dimensional analysis and dynamic similitude, hydraulic machinery. (Sayre.)

M.E. 103. Metallography. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 20, 21, 23 (or E.S. 20). Laboratory fee, \$3.00. A study of the structure of metals and alloys as related to their properties. Study of crystallation, plastic deformation, constitution diagrams, heat treatment and effect of alloying elements on ferrous and non-ferrous materials. Laboratory work in thermal analysis, microscopy heat treatment and testing of metals. (Jackson, Ward.)

M.E. 104. Kinematics. (2)

Second semester. One lecture and one laboratory period a week. Prerequisites, M.E. 24 (or E.S. 21), Math. 21. A study of velocity, acceleration, and displacement of mechanisms, cam motion, gearing and gear trains. (Hayleck, Oetting.)

M.E. 105. Principles of Mechanical Engineering. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, Phys. 21, Math. 21. Required of seniors in civil engineering. Elementary thermodynamics and the study of heat, fuel and combustion in the production and use of steam for generation of power. Supplemented by laboratory tests and trips to industrial plants. (Cather, Sayre.)

NOTE—See *Engineering Sciences* for courses which supersede M.E. 22, 23.

M.E. 107. Heat Power—Chemical and Nuclear. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisite, M.E. 100. Laboratory fee, \$3.00 per semester. Required of seniors in electrical engineering. The study of power plant cycles using as heat sources nuclear reactors, solid, liquid and gaseous fuels. Includes analysis and design of such equipment as: reactors, boilers, turbines, regenerators and their accessories. (Cather.)

M.E. 150, 151. Heat Power—Chemical and Nuclear. (4, 4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, M.E. 100; M.E. 102, concurrently. Required of seniors in mechanical engineering. The study of all types of power plants including internal combustion engines, gas turbines, and steam stations; using all types of heat sources including nuclear reactors, solid, liquid and gaseous fuels. Includes the study of such cycles as Otto, Diesel, Brayton and Rankine. Analysis and design of various components such as: reactors, regenerators, turbines, compressors, boilers and condensers. (Shreeve, Cather, Allen.)

M.E. 152, 153. Mechanical Engineering Design. (4, 3)

First semester. Two lectures and two laboratory periods a week. Second semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 103, M.E. 104. Design of machine elements. Machine design projects. Mechanical vibrations. (Jackson, Hayleck.)

M.E. 154, 155. Mechanical Laboratory. (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisite, senior standing. Required of seniors in mechanical engineering. Laboratory fee, \$3.00 per semester. Experiments on fuels and lubricants, steam engine and turbines, air compressors, gasoline and diesel engines and various other mechanical equipment. Written reports are required on all tests. (Staff.)

M.E. 156. Heating and Air Conditioning. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 100; M.E. 101, concurrently. The fundamentals of heating and cooling load computations. Basic information on heating and air conditioning systems for residential and industrial use. (Allen, Eyler.)

M.E. 157. Refrigeration. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 100, M.E. 101, M.E. 102 concurrently. Laboratory fee, \$3.00 per semester. Thermodynamic analysis of air, vapor compression, absorption and water refrigeration systems. Characteristics of refrigerants. Study of refrigeration as applied to cooling and dehumidification in air conditioning. Low temperature refrigeration, the heat pump, and other special topics. (Allen, Eyler.)

M.E. 158, 159. Applied Elasticity. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M.E. 23 (or E.S. 20). Advanced strength of materials involving beam problems, curved bars, flat plates, shells, statically indeterminate structures. Methods of work and energy. (Hayleck, Wise.)

M.E. 160, 161. Advanced Dynamics. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M.E. 24 (or E.S. 21). Linear, plane and three dimensional motion, moving axes, Lagrange's equation, Hamilton's principle, balancing, vibration, gyroscope, etc. (Hayleck, Wise.)

Mechanical Engineering

M.E. 162, 163. *Advanced Thermodynamics.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 100, 102; Math. 64. Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium. Problems in advanced heat transfer.

(Allen, Shreeve, Eyer.)

M.E. 164. *Research* (3)

First and second semesters. Prerequisite, "B" average and senior standing in mechanical engineering. Arrangements must be made in advance of registration. (Staff.)

M.E. 165. *Creative Engineering.* (3)

First and second semesters. Prerequisite, senior standing in mechanical engineering. Solving design problems in engineering with emphasis on the creative approach.

(Shreeve, Cather.)

M.E. 166, 167. *Advanced Fluid Mechanics.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 102, Math. 64. Hydrodynamic theory, Navier Stokes equations, subsonic and supersonic compressible flow, normal shock theory. Engineering applications.

(Sayre.)

For Graduates

M.E. 200, 201. *Advanced Dynamics.* (3, 3)

First and second semesters. Prerequisites, M.E. 24 (or E.S. 21), Math. 64, M.E. 153, M.E. 155. Mechanics of machinery. Dynamic forces. Balancing of rotating parts. Vibrations and vibration damping. Critical speeds.

(Wise.)

M.E. 202, 203. *Applied Elasticity.* (3, 3)

First and second semesters. Prerequisites, M.E. 23 (or E.S. 20), Math. 64, M.E. 153. Advanced methods in structural and experimental stress analysis. Advanced strength of materials involving beam problems, curved bars, thin plates and shells, buckling of bars, plates and shells, etc. Advanced work in stress concentrations, plastic deformations, etc., and problems involving instability of structures.

(Wise)

M.E. 204, 205. *Advanced Thermodynamics.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 101, M.E. 151, Math. 64. Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium, humidification and refrigeration and availability. Problems in advanced heat transfer covering the effect of radiation, conduction, and convection, steady and unsteady flow, evaporation and condensation.

(Shreeve, Allen.)

M.E. 206, 207. *Advanced Machine Design.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M.E. 153. Application of advanced methods of stress analysis to design of special stationary and moving machine parts, including rotating disk, bearings, thick wall cylinders, screw fastenings, crankshafts, etc. Application of linear and torsional vibration and balancing in the design of machine members. Complete design of a machine. Study of current design literature.

(Jackson.)

M.E. 208, 209. *Steam Power Design.* (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Prerequisite, M.E. 151. Design and specifications of power plants with special emphasis on central stations heated by conventional fuels and nuclear reactors. Design of all components including turbines, boilers, and reactors. Problems of water treatment and waste disposal (atomic and ash) are considered.

(Shreeve.)

M.E. 210, 211. Advanced Fluid Mechanics. (3, 3)

First and second semesters. Prerequisites, M.E. 102, Math. 64 or equivalent. Potential flow theory; three dimensional flow examples; application of complex variables to two-dimensional flow problems; Blasius theorem, circulation and Joukowski hypothesis; engineering applications to cavitation predication and calculation of pressure distribution; introduction to viscous flow and theory of the boundary layer.

(Sayer, Haberman.)

M.E. 212, 213. Advanced Steam Power Laboratory. (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisite, registration in M.E. 204, 205. Research on advanced steam power problems to illustrate and advance steam power theory. Power plant heat balances. (Shreeve.)

M.E. 214, 215. Advanced Applied Mechanics Laboratory. (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisites, registration in M.E. 200, 201 and M.E. 202, 203. Illustrative experiments and research on difficult problems in stress analysis. Photoelasticity. Mechanical vibrations. Critical speeds. Dynamic stresses. Fatigue of materials.

M.E. 216, 217. Advanced Internal Combustion Engine Design. (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Prerequisites, M.E. 150, 151; M.E. 152, 153 and registration in M.E. 200, 201, and M.E. 204, 205. Each student will carry out complete designs of internal combustion engines. (Shreeve.)

M.E. 218, 219. Advanced Internal Combustion Engine Laboratory. (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisite, registration in M.E. 216, 217. Advanced laboratory tests and problems in the design of internal combustion engines. (Shreeve.)

M.E. 220. Seminar.

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. (Staff.)

M.E. 221. Research.

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. Research in any field of mechanical engineering as applied mechanics, heat transfer, thermodynamics, heat, power, etc. (Staff.)

M.E. 222. Advanced Metallography. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 103, M.E. 23 (or E.S. 20). Advanced study of the structure and properties of metals and alloys. Study of the latest developments in ferrous and non-ferrous alloys including stainless steels, high temperature steels, tool steels, aluminum, magnesium and copper alloys. Study of inspection of metals by the use of x-rays, spectograph, metallograph and magniflux. Review of current literature. (Jackson.)

M.E. 223, 224. Steam and Gas Turbine Design. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 101, M.E. 151, Math. 64. Study of nozzles and blades, with application to all types of turbines and compressors based on detailed heat calculations. Design of regenerators and combustors for gas turbines. Applications to jet propulsion. Fundamentals of rocket, pulse jet and ram jet design. (Shreeve.)

Fire Protection

M.E. 225, 226. *Advanced Properties of Metals and Alloys.* (3, 3)

First and second semesters. Three lectures a week. Prerequisite, M.E. 23 (or E.S. 20), M.E. 103, M.E. 152, M.E. 153. Properties of metals including tensile, impact, fatigue, damping capacity, hardenability, wear, etc. Fabrication problems and selection of metals and alloys. Service failures. Properties required for nuclear engineering applications. Properties of metals at elevated and extremely low temperatures. (Jackson.)

M.E. 227, 228. *Theory of Elasticity.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 202, 203. Stress and strain at a point. Relation between stresses and strains, general equations of elasticity, plane strain and plane stress, torsion, bending, axially symmetric distribution of stress, plates, thermal stresses, strain energy and approximate methods.

M.E. 229, 230. *Jet Propulsion.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 101, M.E. 150, M.E. 151. Types of thermal jet units. Fluid reaction and propulsive efficiency. Performance of rockets, aerothermodynamics, combustion chemical kinetics, aerodynamics of high speed air flow. Principles and design of solid and liquid propellant rockets. Design of turbojets and aerojets, ramjets and hydroduct units, including combustion chambers, turbines and compressor. (Shreeve)

M.E. 231, 232. *Advanced Heat Transfer.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 101. Advanced problems covering effects of radiation, conduction, convection, evaporation and condensation. Study of research literature on heat transfer. (Shreeve, Allen.)

M.E. 233, 234. *Compressible Flow.* (3, 3)

First and second semesters. Prerequisites, M.E. 100, M.E. 102, Math. 64 or equivalent. One dimensional subsonic and supersonic flow; compressible flow in ducts and nozzles; two and three dimensional subsonic and supersonic flow; similarity rules; normal and oblique shock waves. (Sayre, Haberman.)

FIRE PROTECTION

Professor: BRYAN.

Assistant Professor: HICKEY.

F. P. 104. *Essentials of Fire Protection.* (3)

First semester. Three lectures a week. An introductory course surveying the entire area of fire prevention and fire protection. A study of the chemistry of combustion and an analysis of the properties of matter affecting fire behavior. Detailed examination of the basic fire hazards.

F. P. 105. *Fire Protection Organization.* (3)

Second semester. Three lectures a week. The evaluation and examination of fire loss records, and the economic aspects of fire protection. A study of the organization and administration of municipal and industrial fire protection.

F. P. 110. *Installations and Equipment.* (4)

Second semester. Three lectures and one laboratory period a week. The design and installation requirements of standard and special extinguishing systems. Standards of types, installation, and maintenance of automatic sprinkler and fire alarm systems. The principles of fire extinguishment with laboratory tests.

F. P. 111. Special Hazards and Problems. (4)

Second semester. Three lectures and one laboratory period a week. An evaluation and consideration of the special hazards in fire protection. A study of present and future problems, with the students selecting field or laboratory research problems.

F. P. 112. Fire Protection Fluids and Systems. (3)

First Semester. Two lectures and one laboratory period a week. A study of the principal fluids utilized in fire extinguishment operations, and fire protection systems. Laboratory and field study of operational and hydraulics problems.

F. P. 117. Technical Projects. (4)

First semester. Three lectures and one laboratory period a week. An examination of the specialized areas of fire protection and the development and problems in these areas. Student development and discussion of research projects in specialized areas of fire protection.

F. P. 120. Insurance Rating and Schedules. (3)

First semester. Two lectures and one laboratory period a week. A study of the insurance grading and rating schedules and their principles of application. The examination of specific laws, codes, and ordinances. Laboratory practice in the preparation of reports, and diagrams.

OTHER COURSES REQUIRED OF OR ELECTED BY ENGINEERING STUDENTS

AIR SCIENCE

Professor and Head: AYLESWORTH.

A. S. 1, 2. *Basic Air Science.* ($\frac{1}{2}$, 2)

A. S. 3, 4. *Basic Air Science.* (2, $\frac{1}{2}$)

A. S. 101, 102. *First Year Advanced Air Science.* (3, 3)

A. S. 103, 104. *Second Year Advanced Air Science.* (3, 3)

NOTE.—Six credits of A.S. 101, 102, 103, 104 may be substituted for H. 5, 6—History of American Civilization (3, 3) in curricula in the College of Engineering.

ART

Professor and Head: JAMES P. WHARTON.

Art. 22. *History of American Art.* (3)

Elective Group II of the American Civilization Program.

BUSINESS ORGANIZATION AND ADMINISTRATION

Professor and Head: JOHN H. FREDERICK.

B. A. 191. *Property Insurance* (3)

Prerequisite, Econ. 32 or 37.

CHEMISTRY*

Professor and Head: WHITE.

Chem. 1, 3. *General Chemistry.* (4, 4)

Prerequisite, 1 year high school algebra or equivalent. (Chem. 3 is usually offered in Summer School).

Chem. 19. *Elements of Quantitative Analysis.* (4)

Prerequisite, Chem. 3. (Usually offered in Summer School).

Chem. 35, 37. *Elementary Organic Chemistry.* (2, 2)

Prerequisite, Chem. 3. (Chem. 37 is usually offered in Summer School).

Chem. 36, 38. *Elementary Organic Laboratory.* (2, 2)

Prerequisites, Chem. 35, 37, or concurrent registration therein. (Chem. 38 is usually offered in Summer School).

*See *Adventure in Learning* for schedule of fees.

Chem. 187, 189. Physical Chemistry. (3, 3)

Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor.
This course must be accompanied by Chem. 188, 190.

Chem. 188, 190. Physical Chemistry Laboratory. (2, 2)

A laboratory course for students taking Chem. 187, 189.

ECONOMICS

Professor and Head: DILLARD.

Econ. 31, 32. Principles of Economics. (3, 3)

Prerequisite, sophomore standing.

Econ. 37. Fundamentals of Economics. (3)

Not open to students who have credit in Econ. 31 and 32. Not open to freshmen.

Econ. 102. National Income Analysis. (3)

Prerequisite, Econ. 32.

Econ. 131. Comparative Economic Systems. (3)

Prerequisite, Econ. 32 or 37.

Econ. 132. Advanced Economic Principles. (3)

Prerequisite, Econ. 32.

Econ. 142. Public Finance and Taxation. (3)

Prerequisite, Econ. 32 or 37.

Econ. 160. Labor Economics. (3)

Prerequisite, Econ. 32 or 37.

Econ. 170. Monopoly and Competition. (3)

Prerequisite, Econ. 32 or 37.

Econ. 171. Economics of American Industries. (3)

Prerequisite, Econ. 32 or 37.

ENGLISH LANGUAGE AND LITERATURE

Professor and Head: MURPHY.

Eng. 1, 2. Composition and American Literature. (3, 3)

Required of freshmen. Eng. 1 is the prerequisite of Eng 2. (See also Eng. 21).

Eng. 3, 4. Composition and World Literature. (3, 3)

Prerequisite, Eng. 2 or 21. Eng. 3, 4 or Eng. 5, 6 or an acceptable combination of the two are required of sophomores. Credit will not be given for more than six hours of work in Eng. 3, 4 and 5, 6.

Eng. 5, 6. Composition and English Literature. (3, 3)

Prerequisite, Eng. 2 or 21. Eng. 3, 4 or Eng. 5, 6 or any acceptable combination of the two are required of sophomores. Credit will not be given for more than six hours of work in Eng. 3, 4 and 5, 6.

Other Course Offerings

Eng. 21. Advanced Freshman Composition and Literature. (3)

Replaces the Eng. 1 and 2 requirements for students exempt from Eng. 1. (Students exempt from Eng. 1 will schedule another 3 credit course in English Language and Literature with a course number *higher* than Eng. 7).

GOVERNMENT AND POLITICS

Professor and Head: PLISCHKE.

G. and P. 1. American Government. (3)

The basic course in government for the American Civilization Program. This course or its equivalent is prerequisite to all other courses in the Department of Government and Politics.

HISTORY

Professor and Head: LAND.

H. 1, 2. History of Modern Europe. (3, 3)

Basic course prerequisite for all advanced courses in European History. H. 2 may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.

H. 5, 6. History of American Civilization. (3, 3)

H. 51, 52. The Humanities. (3, 3)

Either of these courses may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.

H. 56. American Life and Thought. (3)

Required of all students who qualify by examination for exemption from H. 5, 6. (Students who take H. 56 should refer to American Civilization Program for other requirements).

H. 105. Social and Economic History of the United States to 1865. (3)

Prerequisite, H. 5, 6 or the equivalent.

H. 106. Social and Economic History of the United States since the Civil War. (3)

Prerequisites, H. 5, 6 or the equivalent.

H. 129. The United States and World Affairs. (3)

Prerequisites, H. 5, 6 or the equivalent. (Usually offered in Summer School).

INDUSTRIAL EDUCATION

Professor and Head: MALEY.

Ind. Ed. 143. Industrial Safety Education I. (2)

Ind. Ed. 144. Industrial Safety Education II. (2)

MATHEMATICS

Professor and Head: COHEN.

Math. 1. Introductory Algebra. (0)

Recommended for students whose curriculum calls for Math. 18 and who failed the qualifying examination for this course. Special fee, \$30.

Math. 18, 19. Elementary Mathematical Analysis. (5, 5)

Prerequisites, high school algebra completed and solid geometry. (Students should pass qualifying examination for Math 18 before enrolling in the course). (Usually offered in Summer School).

Math. 20, 21. Calculus. (4, 4)

Prerequisite, Math. 19 or equivalent. (Usually offered in Summer School).

Math. 64. Differential Equations for Engineers. (3)

Prerequisite, Math. 21 or equivalent. (Usually offered in Summer School).

Math. 100. Higher Algebra. (3)

Prerequisite, Math. 21 or equivalent.

Math. 110, 111. Advanced Calculus. (3, 3)

Prerequisite, Math. 21 or equivalent.

Math. 116. Introduction to Complex Variable Theory. (3)

Prerequisite, Math. 21 or equivalent.

Math. 117. Fourier Series. (3)

Prerequisite, Math. 114 Differential Equations (3) or equivalent.

Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis. (3, 3)

Prerequisite, Math. 21 or equivalent.

Math. 132. Mathematical Statistics. (3)

Prerequisite, Math. 21 or equivalent.

Math. 133. Advanced Statistical Analysis. (3)

Prerequisite, Math. 132 or equivalent.

Math. 150, 151. Advanced Mathematics for Engineers and Physicists. (3)

Prerequisite, Math. 21 or equivalent.

Math. 152. Vector Analysis. (3)

Prerequisite, Math. 21 or equivalent.

Math. 153. Operational Calculus. (3)

Prerequisite, Math. 21 or equivalent.

Math. 155. Numerical Analysis. (3)

Prerequisite, Math. 110 and 114 or consent of instructor.

Math. 156. Programming for High Speed Computers. (3)

Prerequisite, Math. 21 or equivalent.

Math. 160, 161. Analytic Mechanics. (3, 3)

Prerequisite, Math. 21 or equivalent.

MUSIC

Professor and Head: ULRICH.

Music. 20. Survey of Music Literature. (3)

Course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.

PHILOSOPHY

Professor and Head: GARVIN.

Phil. 1. Philosophy for Modern Man. (3)

PHYSICAL EDUCATION REQUIRED COURSES FOR MEN AND WOMEN*

Dean: LESTER M. FRALEY.

All undergraduate men and women students classified as freshmen or sophomores who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education and/or athletics for a total of four semester hours of credit. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first.

For Men Only

P. E. 1. Orientation to Physical Education. (1)

P. E. 3. Developmental and Combative Sports. (1)

P. E. 5. Team Sports and Aquatics. (1)

P. E. 7. Recreational Activities. (1)

For Women Only

P. E. 2. Orientation Activities. (1)

P. E. 4. Swimming. (1)

P. E. 6. Dance. (1)

P. E. 8. Sports. (1)

*See *Adventure in Learning* for schedule of fees.

HEALTH EDUCATION REQUIRED COURSES FOR WOMEN

Professor and Head: DEACH.

All freshman women are required to complete one semester of Personal Health (Hea 2) and one semester of Community Health (Hea. 4) for graduation. These courses must be taken in consecutive order with Hea. 2 taken first. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever comes first. Women who have reached their thirtieth birthday are exempt from these courses.

Hea. 2. Personal Health. (2)

Hea. 4. Community Health. (2)

PHYSICS*

Professor and Head: TOLL

Phys. 20. General Physics: Mechanics, Heat and Sound. (5)

Math. 20 is to be taken concurrently (or previously).

Phys. 21. General Physics: Electricity, Magnetism, and Optics. (5)

Prerequisite, Phys. 20. Math. 21 is to be taken concurrently (or previously).

Phys. 53. Nuclear Physics and Radioactivity. (3)

Prerequisite, Phys. 11 or 21.

PSYCHOLOGY

Professor and Head: ANDREWS.

Psych. 1. Introduction to Psychology. (3)

For students who qualify to select courses with Elective Group I of the American Civilization Program.

Psych. 2. Applied Psychology. (3)

Prerequisite, Psych. 1.

SOCIOLOGY

Professor and Head: HOFFSOMMER.

Soc. 1. Sociology of American Life. (3)

A course within Elective Group I of the American Civilization Program.

*See catalog of the College of Arts and Sciences for other physics courses of possible interest. See *Adventure in Learning* for schedule of fees.

Other Course Offerings

Soc. 5. Anthropology. (3)

For students who qualify to select courses within Elective Group II of the American Civilization Program. (Usually offered in Summer School).

SPEECH AND DRAMATIC ART*

Associate Professor and Head: STRAUSBAUGH.

Sp. 7. Public Speaking. (2)

*See *Adventure in Learning* for schedule of fees.

FACULTY

1961-1962

COLLEGE OF ENGINEERING GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

FREDERIC THEODORE MAVIS, *Dean*

RUSSELL BENNETT ALLEN, *Assistant Dean*

Department Heads

GORDON OWEN ALLEN, *Librarian, Engineering and Physical Sciences*

ROBERT BADER BECKMANN, *Head, Department of Chemical Engineering*

JOHN LELAND BRYAN, *Head, Fire Protection Curriculum*

ROBERT CHARLES BYRUS, *Director, Fire Service Extension*

GEORGE FRANCIS CORCORAN, *Head, Department of Electrical Engineering*

DONALD SHAEFFER GROSS, *Director, Wind Tunnel Operations*

CHARLES THOMAS GEORGE LOONEY, *Head, Department of Civil Engineering*

MONROE HARNISH MARTIN, *Director, Institute for Fluid Dynamics and Applied Mathematics*

AARON WILEY SHERWOOD, *Head, Department of Aeronautical Engineering*

CHARLES ALFRED SHREEVE, JR., *Head, Department of Mechanical Engineering*

Staff in Residence

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B.S., University of Maryland, 1943; M.S., 1949; PH.D., University of Minnesota, 1959.

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- GERALD CORNING, *Professor of Aeronautical Engineering*
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B.S., University of Maryland, 1947; M.S., 1950.
- DANIEL LEADY GARBER, JR., *Instructor in Civil Engineering*
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- ROBERT MEADE GINNINGS, *Instructor in Electrical Engineering*
B.S., University of Maryland, 1958; M.S., 1960.

- ROBERT J. GLASS, *Instructor in Mechanical Engineering*
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- RUSSELL GLOCK, JR., *Instructor in Electrical Engineering*
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- CARL WILLIAM COHR, *Associate Professor of Civil Engineering*
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- DONALD SHAEFFER CROSS, *Director, Wind Tunnel Operations*
B.S., University of Maryland, 1947.
- WILLIAM ROBERT HAHN, JR., *Instructor in Electrical Engineering*
B.S.E.E., George Washington University, 1958.
- FRANCIS RYOSUKE HAMA, *Research Professor, Institute for Fluid Dynamics and Applied Mathematics, and Lecturer in Aeronautical Engineering*
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- CHARLES RAYMOND HAYLECK, JR., *Associate Professor of Mechanical Engineering*
B.S., University of Maryland, 1943; M.S., 1949.
- HARRY ELMER HICKEY, *Assistant Professor, Fire Protection Curriculum*
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- JAMES EDWARD ALBERT JOHN, *Instructor in Mechanical Engineering*
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- HAROLD CHESTER JONES, *Instructor in Electrical Engineering*
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- RAYMOND JOHN KRIZEK, *Instructor in Civil Engineering*
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- HENRY ALBERT LEPPER, JR., *Professor of Civil Engineering*
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Faculty

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B.SC., Imperial College of Science, London, 1952; D.I.C., 1953; PH.D., 1955.

THOMAS CHARLES GORDON WAGNER, *Professor of Electrical Engineering*

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B.S.M.E., Duke University, 1956.

PRESLEY ALLEN WEDDING, *Associate Professor of Civil Engineering*

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DIPL. ING., Hannover Institute of Technology, 1924; M.S., Harvard University,
1931; SC.D., 1934; Registered Professional Engineer.

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B.S., University of Maryland, 1949; M.ED., 1952; PH.D., University of Florida, 1960.

JACKSON YANG, *Instructor in Mechanical Engineering*

B.S., University of Maryland, 1958.

Lecturers and Educational Advisers

- EUGENE HUFF BEACH, *Lectutrer in Electrical Engineering*
B.S., University of Michigan, 1941; M.S., 1947; PH.D., 1953.
- DELBERT BLOEM, *Lecturer in Civil Engineering*
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- YOAHAN CHU, *Lecturer in Electrical Engineering*
B.S., Chio-Tung University, China, 1942; M.S., Massachusetts Institute of Technology, 1945; sc.d., 1953.
- JACOB JOACHIM FREEMAN, *Lecturer in Electrical Engineering*
B.S., College of William and Mary, 1933; MA., Columbia University, 1935; PH.D., Catholic University of America, 1949.
- WILLIAM LAWRENCE HABERMAN, *Lecturer in Mechanical Engineering*
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B.S.E., (E.E.), University of Michigan, 1928; B.S.E., (MATH.), 1929; M.S.E. (E.E.) 1929.
- JEROME KRUGER, *Lecturer in Chemical Engineering*
B.S., Georgia Institute of Technology, 1948; M.S., 1949; PH.D., University of Virginia, 1952.
- JOSEPH ABRAHAM LIEBERMAN, *Lecturer in Chemical Engineering*
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- ALBERT LIGHTBODY, *Lecturer and Adviser in Chemical Engineering*
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- BLAKE MARSHALL LORING, *Lecturer in Chemical Engineering*
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- GEORGE ANDREW MOORE, *Lecturer in Chemical Engineering*
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- JOHN DUDLEY NICOLAIDES, *Lecturer in Aeronautical Engineering*
B.A., Lehigh University, 1946; M.S.E., The Johns Hopkins University, 1952.
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B.S.E.E., Illinois Institute of Technology, 1943; M.S., University of Maryland, 1948.
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COLLEGE
of
HOME ECONOMICS

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UNIVERSITY OF MARYLAND

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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26-1 Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 {

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i>	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER <i>Vice-Chairman</i>	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN <i>Secretary</i>	1967
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE <i>Treasurer</i>	1966
Denton	
LOUIS L. KAPLAN <i>Assistant Secretary</i>	1961
5800 Park Heights Avenue, Baltimore 15	
C. EWING TUTTLE <i>Assistant Treasurer</i>	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
RICHARD W. CASE	1967
Commercial Credit Building, Baltimore	
THOMAS W. PANGBORN	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS	1963
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WILLIAM C. WALSH	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST	1967
4101 Greenway, Baltimore 18	

Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

OFFICERS OF ADMINISTRATION

Principal Administrative Officers

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936; D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

E.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

Emeriti

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women Emeritus*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

Administrative Officers of the Schools and Colleges

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;
ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University
of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agriculture Experiment Station and Head, Department
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,
University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,
1917.

VERLE S. LEWIS, *Dean of the School of Social Work*

A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western
Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;
PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,
Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930,
Diplome de l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical
Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;
PH.D., (HON.), University of Louisville, 1946.

General Administrative Officers

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of
Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania,
1949.

- B. JAMES BORRESON, *Executive Dean for Student Life*
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*
B.A., University of Maryland, 1938.
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B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
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A.B., University of Maryland, 1930.
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B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; ED.D., Teachers College, Columbia, 1960.
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B.S., University of Iowa, 1936; M.D., 1926.
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B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- HARRY D. FISHER, *Comptroller and Budget Officer*
B.S., University of Maryland, 1943.
- GEORGE W. FOGG, *Director of Personnel*
B.A., University of Maryland, 1926; M.A., 1928.
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B.A., University of Massachusetts, 1941.
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B.S., University of Maryland, 1927; E.E., 1931.
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B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- ORVAL L. ULRY, *Director of the Summer Session*
B.S., Ohio State University, 1938; M.A., 1944; PH.D., 1953.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*
B.S., University of Maryland, 1933.

Division Chairmen

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

CHARLES E. WHITE, *Chairman of the Lower Division*
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

ADOLF E. ZUCKER, *Chairman of the Division of Humanities*
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania,
1917.

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Dr. Augustus J. Prah (Graduate School), *Chairman*

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STUDENT ACTIVITIES

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FINANCIAL AIDS AND SELF-HELP

Dr. Paul E. Nystrom (Agriculture), *Chairman*

STUDENT PUBLICATIONS AND COMMUNICATIONS

Prof. Warren Strausbaugh (Arts and Sciences), *Chairman*

RELIGIOUS LIFE

Dr. Redfield Allen (Engineering), *Chairman*

STUDENT HEALTH AND SAFETY

Dr. M. H. Eyler (Physical Education), *Chairman*

STUDENT DISCIPLINE

Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krah1 (Medicine), *Chairman*

THE COLLEGE

THE COLLEGE OF HOME ECONOMICS SERVES MARYLAND AND THE SURROUNDING area with its program for the education of young women and men interested in social, economic, scientific, and aesthetic aspects of homemaking and of family living in relation to the community. The educational offerings of the College are planned to help students function effectively and creatively as individuals, as family members, and as responsible citizens; to prepare them for positions for which home economics is a major or minor preparation; and to promote an appreciation and utilization of the findings of research. The College is concerned with contributing to the education for home and family life of women and men enrolled in other schools and colleges as well as those majoring in home economics.

The College of Home Economics is organized into the Departments of Food, Nutrition, and Institution Management; Home Management; Practical Art and Crafts; and Textiles and Clothing. The curricula offered are: general home economics; applied art (merchandising, advertising, crafts, costume and interior design); food and nutrition and related science; home economics education; home economics extension; home management; institution management; textiles and clothing; and textiles and related science.

The over-all function of home economics is to integrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy, and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

Special Facilities and Activities

PHYSICAL FACILITIES

The home of the College of Home Economics, following campus tradition, is a colonial brick building planned and built to present modern equipment and facilities for education in home economics. A home management house is maintained on the campus for resident experience in management activities of family life.

Located, as the campus is, between two large cities, unusual opportunities are provided for both faculty and students. In addition to the University's general and specialized libraries, Baltimore and Washington furnish added library facilities. The art galleries and museums, the government bureaus and city institutions stimulate study and provide enriching experiences for the home economics student.

SOCIETIES

Home Economics Club: Membership is open to all home economics students. The Club is affiliated with the American Home Economics Association.

Omicron Nu, national home economics honor society: Students of high scholarship are eligible for election to membership.

Honors and Awards, Scholarships and Loan Fund

The Danforth Foundation and the Ralston Purina Company Summer Fellowships: One of four weeks to an outstanding junior; one of two weeks to an outstanding freshman.

Borden Home Economics Scholarship Award: Three hundred dollars is given by the Borden Company to the Home Economics student, who, upon entering her senior year, has completed two or more courses in foods and nutrition and has the highest scholastic standing of eligible students.

Omicron Nu Scholarship Award: Omicron Nu presents annually an award to the freshman in the College of Home Economics who attains the highest scholastic average during the first semester.

Sears Roebuck Scholarships: The Sears Roebuck Foundation has made available to freshmen in the College of Home Economics two scholarships of three hundred dollars each.

M. Marie Mount Memorial Scholarship: Two hundred fifty dollars is awarded each year to a junior or senior student who shows outstanding potential as a professional home economist.

Washington Stewards and Caterers Scholarships: The Washington Stewards and Caterers Association has made available two two hundred fifty dollar scholarships to juniors or seniors who are preparing for a career as food manager or dietitian.

Venia M. Kellar Grant: A grant of one hundred dollars is open to a Maryland student of promise who wishes to enroll in the College of Home Economics.

A loan fund, composed of contributions by the District of Columbia Home Economics Association, Maryland Chapter of Omicron Nu, and personal gifts, is available for students majoring in home economics.

Home Economics Senior Award: The Home Economics alumni annually present an award to the senior student who is outstanding in her application of the spirit and principles of home economics in her present living and who best shows promise of carrying these into her future home and community.

For other scholarships and awards, see *An Adventure in Learning*.

Academic Information

ADMISSION

All students desiring to enroll in the College of Home Economics must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students emphasis will be placed upon good marks and other indications of probable success in college as well as upon the pattern of subjects pursued in high school. In general, 4 units of English and 1 unit each of

social and natural sciences, algebra and plane geometry are required. While foreign language is desirable for certain programs no foreign language is required for entrance.

COSTS

Actual annual costs of attending the University include \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A charge of \$300.00 is assessed students not residents of the State of Maryland. A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the application fee.

Complete information regarding costs is available in the publication, *An Adventure in Learning*.

Senior students enrolled in Home Mgt. 152 are considered resident students and will be charged room rent at the same rate as the women's residence hall. Students living off-campus will be charged room rent for the five-week period of home management residence.

DEGREES

The degree of Bachelor of Science is conferred for the satisfactory completion with an average of "C" or better, of a prescribed curriculum of 120 academic semester hour credits. This is exclusive of 4 credits in hygiene and 4 in physical activities for women—a total of 128 credits, and exclusive of 8 credits in Basic Air Science and 4 in physical activities for men—a total of 136 credits. No grade below a "C" is acceptable in courses within the field chosen as a major.

The Master of Science degree is offered in food, in nutrition, in textiles and clothing and in general home economics in the College of Home Economics, and in home economics education in the College of Education. (See the Graduate School Announcements.)

AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of air science training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which may lead to a regular or reserve commission in the United States Air Force.

For further details concerning Air Science, refer to *University General*

Academic Information

and *Academic Regulations*, a publication mailed in September and February of each year to all new undergraduate students.

THE STUDENT LOAD

The student load in the College of Home Economics varies from 15-18 credits. A student wishing to carry more than 18 credits must have a "B" grade average and permission of the Dean.

CURRICULA*

A student may elect one of the following curricula, or a combination of curricula: food, nutrition or institution management (food service); general home economics; home economics education; home economics extension; practical art or crafts; and textiles or textiles and clothing. A student who wishes to teach home economics may register in home economics education in the College of Home Economics or in the College of Education. (See Home Economics Education.)

AMERICAN CIVILIZATION PROGRAM

The University considers it important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American civilization designed to provide the student with this general educational background. (See *University General and Academic Regulations*.)

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

Through such testing a student may be released from 3 hours of English, 3 hours of American history, and 3 hours of American government, leaving 9 hours of English and 3 hours of American history as absolute requirements. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 56 instead of H. 5 and 6.

The following courses required of all home economics majors may apply to the American Civilization Program: Econ. 37, Soc. 1, and Psych. 1.

General Information

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a gen-

*In order to meet the particular need of a student, certain adjustments in these requirements may be made with the approval of the student's adviser and Dean.

eral nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean

(College in which you are interested)

The University of Maryland

College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean

(School in which you are interested)

The University of Maryland

Lombard and Greene Streets

Baltimore 1, Maryland

CURRICULA AND REQUIRED COURSES

Students in all curricula follow similar programs during the freshman year. It is advisable for a student to choose a curriculum at the beginning of the sophomore year, as he is often at a disadvantage if a change is made later. Before continuing with the third year of any curriculum, a student must have attained junior standing: 56 academic credits with a "C" grade average. (See *University General and Academic Regulations*, Junior Standing.)

Faculty advisers assist the students to develop a wise arrangement of studies in their chosen fields, and further, urge them to acquire practical experience therein before graduation.

<i>Freshman Year*</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature ¹	3	3
Soc. 1—Sociology of American Life.....	(3)	3
G. & P. 1—American Government ¹	3	(3)
Speech 7—Public Speaking.....	2	(2)
H. E. 1—Home Economics Orientation ²	0	..
Tex. 1—Textiles.....	(3)	3
Pr. Art 1—Design.....	3	(3)
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
A. S. 1, 2—Basic Air Science (for men students).....	(1½)**	(2)
Physical Activities.....	1	1
Chem. 11, 13—General Chemistry, Science, or elective ³	3	3
Total.....	15½-17	15

FOOD, NUTRITION, AND INSTITUTION MANAGEMENT

The Department offers the opportunity for the election of one of three curricula: food, nutrition or institution management.

Graduates of the food and nutrition curriculum find positions in the consumer education departments of a wide variety of food and equipment industries, magazines and advertising firms, doing testing, editorial or promotion work. They may become nutritionists with industry or in state or community programs.

*See individual curricula for variations.

**Concurrently with A.S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹See information on page 4 concerning the American Civilization Program.

²Not required of men students.

³For practical art, crafts, and textiles and clothing majors, science credits totaling 4 semester hours may be selected from the following: Bot. 1—General Botany (4); Chem. 1, 3—General Chemistry (4, 4); Chem. 11, 13—General Chemistry (3, 3); Ent. 1—Introductory Entomology (3); Geog. 1, 2—Economic Resources (2, 2); Phys. 1, 2—Elements of Physics (3, 3); Soc. 5—Anthropology (3). For all other curricula, chemistry is required.

The curriculum also prepares students for graduate study, research, or work as laboratory technicians.

The institution management curriculum prepares students for food service administration in such institutions as hospitals, colleges and school lunch rooms; in commercial organizations: restaurants, inns, hotels, and industrial food service. Institution management majors meet the academic requirements for entrance to a dietetic internship approved by the American Dietetic Association. Students following this major are required to have, before the senior year, work experience in food service. This experience must be satisfactory in length of time, type and quality of work.

Men specializing in either the food and nutrition or institution management major will be allowed substitutions for certain required courses.

FOOD AND NUTRITION CURRICULUM

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry.....	3	3
Foods 52, 53—Science of Food Preparation.....	3	3
Zool. 1—General Zoology	4	..
Psych. 1—Introduction to Psychology.....	3	(3)
Econ. 37—Fundamentals of Economics.....	(3)	3
Microb. 1 General Microbiology .....	..	4
Physical Activities	1	1
A. S. 3, 4—Basic Air Science (for men students)	(2)	(½)
	<hr/>	<hr/>
Total	17-19	17-17½
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home.....	3	3
Foods 100—Food Economics.....	2	..
Foods 101—Meal Management .....	..	2
Nut. 110—Nutrition	3	..
Nut. 112—Dietetics ¹ .....	..	3
Chem. 81, 82—General Biochemistry	4	..
C. Ed. 110—Child Development.....	..	3
H. 5, 6—History of American Civilization ²	3	3
Pr. Art 2—Survey of Art History.....	2	..
Elective .....	..	3
	<hr/>	<hr/>
Total	17	17

¹Food majors take Foods 105, Foods of Other Countries.

²See information on page 4 concerning the American Civilization Program.

Food, Nutrition and Institution Management Curriculum

	—Semester—	
	I	II
<i>Senior Year</i>		
Nut. 120—Advanced Nutrition	3	3
Home Mgt. 152—Experience in Management of the Home	3	3
Foods 102—Experimental Foods	3	3
H. E. 103—Demonstrations	(2)	2
Foods 104—Advanced Foods	2-3	..
Elective	12-13	3
	—	—
Total	14-16	14

INSTITUTION MANAGEMENT CURRICULUM

<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry	3	3
Foods 52, 53—Science of Food Preparation	3	3
Econ. 37—Fundamentals of Economics .....	..	3
Pr. Art 2—Survey of Art History	2	..
Psych. 1—Introduction to Psychology	3	..
Microb. 1—General Microbiology .....	..	4
A. S. 3, 4—Basic Air Science (for men students)	(2)	(½)
Physical Activities	1	1
	—	—
Total	15-17	17-17½

<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home	3	3
Nut. 110—Nutrition	3	..
Nut. 112—Dietetics .....	..	3
Chem. 81, 82—General Biochemistry	4	..
Inst. Mgt. 160—Institution Organization and Management	3	..
Inst. Mgt. 161—Institution Purchasing and Accounting .....	..	3
C. Ed. 110—Child Development III .....	..	3
Nut. 113—Diet and Disease ¹ .....	..	2
Inst. Mgt. 162—Institution Foods .....	..	3
Zool. 1—General Zoology	4	..
	—	—
Total	17	17

¹A student planning to do institutional work other than hospital dietetics is not required to take Nut. 113, Diet and Disease.

General Home Economics Curriculum

	Semester	
	I	II
<i>Senior Year</i>		
H. 5, 6—History of American Civilization ²	3	3
Home Mgt. 152—Experience in Management of the Home	3	
Nut. 120—Advanced Nutrition		3
Foods 104—Advanced Foods	2	
Psych. 110—Educational Psychology	3	
Foods 102—Experimental Foods		3
Inst. Mgt. 164—Advanced Institution Management		2
Electives	4	4
	<hr/>	<hr/>
Total	15	15

GENERAL HOME ECONOMICS

The general home economics curriculum is planned to give students a good basis for personal development, for education in family living, and for job opportunities requiring a general knowledge of the various areas of home economics. Electives are adequate for further developing a special ability or interest within the areas of home economics or within other colleges, such as: music, social science, radio, journalism, education.

	Semester	
	I	II
<i>Sophomore Year*</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry	3	3
Foods 52, 53—Science of Food Preparation	3	3
Econ. 37—Fundamentals of Economics	3	
Microb. 1—General Microbiology		4
Clo. 20—Clothing Construction	3	
Pr. Art 20—Costume Design		3
Physical Activities	1	1
A. S. 3, 4—Basic Air Science (for men students)	(2)	(½)
Electives	(3)	(3)
	<hr/>	<hr/>
Total	16-18	17-17½

²See information on page 4 concerning the American Civilization Program.

*Chem. 31, 32, 33, 34 recommended as an elective for students with special interest in and need for Food and Nutrition.

Home Economics Extension Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home.....	3	3
Nut. 110—Nutrition or	3	..
Nut. 10—Elements of Nutrition.....	(3)	..
Pr. Art 2—Survey of Art History.....	2	..
Pr. Art 40, 41—Interior Design	1	3
Clo. 22—Clothing Construction or Clo. 21, Pattern Design....	..	2-(3)
Foods 100—Food Economics.....	2	..
Foods 101—Meal Management .....	..	2
Zool. 1—General Zoology	4	..
Psych. 1—Introduction to Psychology.....	..	3
Elective	3	3
Total	18	16-(17)
<i>Senior Year</i>		
C. Ed. 110—Child Development III.....	3	..
H. 5, 6—History of American Civilization ¹	3	3
Home Mgt. 152—Experience in Management of the Home....	..	3
Electives	(8)-9	9
Total	(14)-15	15

HOME ECONOMICS EXTENSION

This curriculum provides training for home demonstration work. It includes the basic sciences and the technical subjects related to farm, home and community situations that home demonstration agents encounter. It provides an opportunity to gain insight and understanding into the attitudes and appreciations expected of a professional extension worker.*

<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry ²	3	3
Foods 52, 53—Science of Food Preparation.....	3	3
Econ. 37—Fundamentals of Economics.....	3	..
Clo. 20—Clothing Construction.....	3	..
Psych. 1—Introduction to Psychology.....	..	3
Clo. 21—Pattern Design .....	..	3
Physical Activities	1	1
Total	16	16

¹See information on page 4 concerning the American Civilization Program.

*Experience in the field of home economics extension is encouraged for all students majoring in this curriculum. Such experience should be gained before the completion of the senior year.

²Chem. 31, 32, 33, 34 recommended for students with special interest in and need for Food and Nutrition.

Home Economics Extension Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home	3	3
R. Ed. 160—Agricultural Information Methods	2	
Nut. 110—Nutrition	3	
H. 5, 6—History of American Civilization ¹	3	3
H. D. Ed. 100, 101—Principles of Human Development I and II	3	3
Nut. 112—Dietetics		3
R. Ed. 150—Extension Education		2
Zool. 1—General Zoology	4	
Microb. 1—General Microbiology		4
Total	18	18
<i>Senior Year</i>		
Home Mgt. 152—Experience in Management of the Home	3	
H. E. 103—Demonstrations	(2)	2
Pr. Art 2—Survey of Art History		2
Soc. 113—The Rural Community		3
Pr. Art elective (Pr. Art or Crafts course)	(2)-3	
Clo. 128—Home Furnishings		3
H. E. Ed. 102—Problems in Teaching Home Economics	3	
Foods 100—Food Economics	2	
Foods 101—Meal Management	2	
Electives	2	4-(5)
Total	(14)-15	14-(15)

PRACTICAL ART AND CRAFTS

PRACTICAL ART

This curriculum permits a choice of three fields of concentration: art in advertising design, interior design, costume design. Emphasis is given to the selection of wearing apparel and house furnishings with relation to personality and to family living. Positions available to graduates include designing, promotion, selling or buying of wearing apparel or house furnishings or both.

Freshman Year

Pr. Art 2—Survey of Art History (2) and O. T. 1—Principles of Typewriting (2) are recommended subjects for the freshman year.

¹See information on page 4 concerning the American Civilization Program.

Practical Art Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Econ. 37—Fundamentals of Economics.....	3	..
Psych. 1—Introduction to Psychology.....	..	3
Foods 1—Introductory Foods	3	(3)
Pr. Art 20—Costume Design	3	..
Pr. Art 21—Action Drawing.....	..	2
Pr. Art 30—Typography and Lettering	3	..
Pr. Art 41—Interior Design	(3)	3
Laboratory Science .....	..	4
Physical Activities	1	1
Total	16-18	16-16½
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home.....	3	3
Foods 101—Meal Management	2	..
Nut 10—Elements of Nutrition.....	..	3
B. A. 150a—Marketing Principles and Organization ¹	3	..
B. A. 154—Retail Store Management ¹	3	..
Pr. Art 38—Photography ¹	2	..
Pr. Art 120, 121—Costume Illustration, or.....	2	2
Pr. Art 142, 143—Advanced Interior Design.....	(2)	(2)
One group of the following:.....	3	3
Advertising: Cr. 3—Creative Art Inspired by Primitive Art (2)		
Pr. Art 4—Three-dimensional Design (2)		
Pr. Art 3—Silk Screen Printing (2)		
Costume: Clo. 120—Draping (3)		
Tex. 105—Consumer Problems in Textiles (3)		
Interior: Tex. 106—Household Textiles (3)		
Clo. 128—Home Furnishings (3)		
Elective .....	..	3
Total	18	14

¹Women students who desire a non-business program may substitute one of the following programs for the 18 credits in these courses: 12 semester hours of French, German, or Spanish plus one of the following groups of courses: I—Soc. 5—Anthropology (3); Eng. 12—Introduction to Creative Writing (2); Eng. 170—Creative Writing (2) or Speech 117—Radio Continuity Writing (3). II—Journ. 10, 11—News Reporting (6); Journ. 165—Feature Writing (3). III—Art 5—Still-life (3); Art 104—Life Class (3); Art 113—Illustration (3). IV—Soc. 5—Anthropology (3), H. 51, 52—The Humanities (6) or Art 9, 11—Historical Survey of Painting, Sculpture, and Architecture (6). With any of these variations of the Practical Art curriculum, the student is responsible for being able to schedule her full program of courses. The above curriculum variations are not open to men students as their program is sufficiently flexible.

<i>Senior Year</i>	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
H. 5, 6—History of American Civilization ²	3	3
Home Mgt. 152—Experience in Management of the Home	(3)	3
C. Ed. 110—Child Development III	(3)	3
Speech 115—Radio in Retailing ¹	3	..
B. A. 155—Problems in Retail Merchandising ¹	..	3
Pr. Art 132—Advertising Layout	2	(2)
Pr. Art 136—Display	2	(2)
Individual Problems in Advertising Costume, or Interior	2	2
Electives	3	2
Total	15	16

PRACTICAL ART (FOR MEN)

Requirements are the same as for women with the following modifications:

Additions: A.S. 1, 2, 3, 4; 15 hours in art in merchandising, merchandising, and creative writing to be selected in consultation with the student's adviser.

Omissions: H.E. 1, Foods 1, 101; Home Mgt. 150, 151, 152, Hea. 2,4.

CRAFTS

This curriculum permits a choice of two vocational areas: pre-occupational therapy and teaching. Emphasis is given to the joy of creation through crafts with good design being stressed.

Freshman Year

Pr. Art 2—Survey of Art History (2) is a required subject of the freshman year.

¹Women students who desire a non-business program may substitute one of the following programs for the 18 credits in these courses: 12 semester hours of French, German, or Spanish plus one of the following groups of courses: I—Soc. 5—Anthropology (3); Eng. 12—Introduction to Creative Writing (2); Eng. 170—Creative Writing (2) or Speech 117—Radio Continuity Writing (3). II—Journ. 10, 11—News Reporting (6); Journ. 165—Feature Writing (3). III—Art 5—Still-life (3); Art 104—Life Class (3); Art 113—Illustration (3). IV—Soc. 5—Anthropology (3), H. 51, 52—The Humanities (6) or Art 9, 11—Historical Survey of Painting, Sculpture, and Architecture (6). With any of these variations of the Practical Art curriculum, the student is responsible for being able to schedule her full program of courses. The above curriculum variations are not open to men students as their program is sufficiently flexible.

²See information on page 4 concerning the American Civilization Program.

Crafts Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
Foods 1—Introductory Foods	3	..
Econ. 37—Fundamentals of Economics	3	..
Psych. 1—Introduction to Psychology	..	3
Pr. Art 3—Silk Screen Printing	..	2
Pr. Art 4—Three-dimensional Design	2	..
Cr. 2—Simple Crafts	2	..
Cr. 3—Creative Art Inspired by Primitive Art	2	..
Cr. 20, 21—Ceramics	2	2
Laboratory Science (see below, Pre-occupational Therapy)	..	4
Physical Activities	1	1
Electives ¹	..	3
Total	18-20	18-18½
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home	3	3
H. 5, 6—History of American Civilization ²	3	3
Nut. 10—Elements of Nutrition	..	3
Cr. 30, 31—Metalry	2	2
Cr. 40, 41—Weaving	2	2
Ind. Ed. 9—Industrial Arts in the Elementary School	2	..
Ind. Ed. 2—Elementary Woodworking	..	2
Electives ¹	4	2
Total	16	17
<i>Senior Year</i>		
Pr. Art 38—Photography	2	..
Cr. 5—Puppetry	..	3
Advanced Crafts	4	2
Electives ¹	7	9
Total	13	14

¹One of the two following programs to be completed in addition to the above specified subjects: I—Pre-Occupational Therapy: Zool. 1—General Zoology (4); Zool. 14, 15—Human Anatomy and Physiology (4, 4); Phys. 1—Elements of Physics (3); P. E. 100—Scientific Bases of Movement (4); Psych. 5—Mental Hygiene (3); Art 7—Landscape Painting (3). II—Teaching: H.D. Ed. 100, 101—Principles of Human Development (3, 3); Ed. 130 or 131—Theory of Junior or Senior High School (2); Ed. 140—Curriculum, Instruction and Observation in Art (3); Ed. 145—Principles of High School Teaching (3); Ed. 148—Practice Teaching in Art (8).

²See information on page 4 concerning the American Civilization Program.

CRAFTS (FOR MEN)

Requirements are the same as for women with the following modifications:

Additions: A. S. 1, 2, 3, 4; also 9 hours in crafts, art therapy or other courses closely related to the student's objective. These to be selected in consultation with the student's adviser and approved by him.

Omissions: H. E. 1, Foods 1; Home Mgt. 150, 151; Hea. 2, 4.

For other curricula in art, see offerings under the College of Education and the College of Arts and Sciences.

TEXTILES AND CLOTHING

The curricula in textiles and clothing are planned to help students to be intelligent and responsible consumers; to give them preliminary training for positions in textiles and clothing in business, in textile testing, and research in textiles and clothing.

Men majoring in these curricula will be allowed substitutions for certain required courses and will choose supporting courses according to their particular interests and needs.

Clo. 20, Clothing Construction, is to be taken in the second semester of the freshman year instead of an elective. Clo. 22, Clothing Construction, may be required of students needing the additional experience.

	Semester	
	I	II
<i>Sophomore Year*</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature	(3)	(3)
Chem. 11, 13, Science or Elective ¹	3	3
Foods 1—Introductory Foods		3
Econ. 37—Fundamentals of Economics	3	(3)
Psych. 1—Introduction to Psychology	(3)	3
Pr. Art 20—Costume Design		3
Clo. 21—Pattern Design	3	(3)
A. S. 3, 4—Basic Air Science (for men students)	(2)	(½)
Physical Activities	1	1
Electives	3	
Total	16	14½-16

¹Chem. 11, 13 are required for a major in textiles.

Textiles and Clothing Curriculum

TEXTILES CURRICULUM

	Semester	
	I	II
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home	3	3
Foods 101—Meal Management	2	..
Nut. 10—Elements of Nutrition or	3	..
Nut. 110—Nutrition	(3)	..
Art	..	2
Phys. 1, 2—Elements of Physics	3	3
Chem. 31, 32, 33, 34—Elements of Organic Chemistry	3	3
Math. 10—Algebra	..	3
Tex. 100—Advanced Textiles	3	..
Tex. 102—Textile Testing	..	3
Total	17	17
<i>Senior Year</i>		
H. 5, 6—History of American Civilization ¹	3	3
Microb. 1—General Microbiology	..	4
Tex. 101—Problems in Textiles	..	3
Chemistry	..	4
Home Mgt. 152—Experience in Management of the Home	3	..
B. A. 130—Elements of Business Statistics	3	..
Speech ²	..	3
C. Ed. 110—Child Development III	3	..
Elective	2	..
Total	14	17

TEXTILES AND CLOTHING CURRICULUM

<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home	3	3
Nut. 10—Elements of Nutrition	..	3
Art	3	3
Clo. 122—Tailoring	2	..
Tex. 100—Advanced Textiles	3	..
Foods 101—Meal Management	2	..
Psychology	..	3
Tex. 108—Decorative Fabrics	2	..
Microb. 1—General Microbiology	..	4
C. Ed. 110—Child Development III	3	(3)
Total	16-18	16

¹See information on page 4 concerning the American Civilization Program.

²Selected with adviser's consent.

Home Economics Education Curriculum

<i>Senior Year</i>	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
H. 5, 6—History of American Civilization ¹	3	3
Tex. 105—Consumer Problems in Textiles .	(3)	3
Home Mgt. 152—Experience in Management of the Home	3	(3)
Clo. 120—Draping	3	
Clo. 124—Projects and Readings in Textiles and Clothing	2	
Speech ²	3	(3)
Clo. 126—Fundamentals of Fashion		3
Electives	3	5
	<hr/>	<hr/>
Total	17	14

HOME ECONOMICS EDUCATION

Students electing this curriculum may register in the College of Home Economics or in the College of Education.

The home economics education curriculum is designed for students who are preparing to teach vocational or general home economics or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional preparation for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

<i>Freshman Year</i>	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
Ed. 1—Freshman Orientation ³	0	..
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology	3	..
Chem. 11, 13 or 1, 3—General Chemistry	3-4	3-4
H. E. 1—Home Economics Orientation	0	..
Tex. 1—Textiles . . . . .	..	3
Pr. Art 1—Design	3	..
Hea. 2—Personal Health (women)	2	..
Hea. 4—Community Health (women) . . . . .	..	2
P. E. 2, 4	1	1
G. & P. 1—American Government . . . . .	..	3
Sp. 1—Public Speaking . . . . .	..	3
Electives	1-2	..
	<hr/>	<hr/>
Total	16-18	18-19

¹See information on page 4 concerning the American Civilization Program.

²Selected with adviser's consent.

³May be taken either semester.

Home Economics Education Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education ¹	2	
Eng. 3, 4—Composition and World Literature or Eng. 5, 6—Composition and English Literature	3	3
H. 5, 6—History of American Civilization	3	3
Pr. Art 20—Costume Design		3
Clo. 20—Clothing	3	
Foods 2, 3—Foods ²	3	3
P. E. 6	1	1
Bot. 1—General Botany		4
Electives ³	1-2	
Total	16-17	17
<i>Junior Year</i>	I	II
H. E. Ed. 140—Curriculum, Instruction and Observation	3	
H. D. Ed. 100, 101—Principles of Human Development	3	3
Home Mgt. 150, 151—Home Management	3	3
Foods 101—Meal Management	2	
Clo. 22—Clothing Construction		2
Nut. 10 or 110—Elements of Nutrition		3
Econ. 37—Fundamentals of Economics		3
Zool. 1—General Zoology	4	
Electives	2	3
Total	17	17
<i>Senior Year*</i>		
H. E. Ed. 102—Problems in Teaching Home Economics	3	
Ed. 145—Principles and Methods of Secondary Education	3	
H. E. Ed. 148—Teaching Secondary Vocational Home Economics	8	
Home Mgt. 152—Practice in Management of the Home	3	
Pr. Art 2—Survey of Art History or Clo. 128—Home Furnishings		2-3
Microb. 1 General Microbiology		4
Electives		6
Total	17	10-13

*Subjects in the senior year will be so arranged that the two semesters may be interchanged.

¹May be taken either semester.

²Foods 52, 53 carries a prerequisite of Chem. 31, 32, 33, 34.

³Chem. 31, 32, 33, 34, Organic Chemistry, recommended as an elective or in lieu of General Botany for individuals with special interest in and need for Food and Nutrition.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

399: Graduate Research.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

FOOD, NUTRITION, AND INSTITUTION MANAGEMENT*

Associate Professors: BRAUCHER AND BROWN.

Assistant Professors: COLLINS AND CORNELL

Instructors: HAMMEL, HOYT

FOOD

Foods 1. Introductory Foods. (3)

First and second semesters. Three laboratory periods a week. Laboratory fee, \$10.00. For students in other colleges and for majors in crafts, practical art, textiles and clothing.

Foods 2, 3. Foods. (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Pre-requisites, Chem. 1, 2 or 11, 13. Laboratory fee, \$10.00. Composition, structure and preparation of food with study of scientific principles involved. Analysis of recipes and criteria for acceptable products.

*Tailored white uniforms are required for all laboratory work in Food and Nutrition.

Food, Nutrition, and Institution Management

Foods 52, 53. Science of Food Preparation. (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Prerequisites, Chem. 31, 32, 33, 34 to precede or parallel. Laboratory fee, \$10.00. Composition and structure of food with study of the fundamental principles involved in food preparation.

NUTRITION

Nut. 10. Elements of Nutrition. (3)

First and second semesters. Laboratory fee, \$3.00. For students in other colleges and for majors in crafts, practical art and textiles and clothing.

For Advanced Undergraduates and Graduates

FOOD

Foods 100. Food Economics. (2)

First semester. One lecture and one laboratory period a week. Prerequisite, Foods 1 or 2, 3, or 52, 53. Laboratory fee, \$7.00. Sources of our food supply; buying of food for the family.

Foods 101. Meal Management. (2)

First and second semesters. Two laboratory periods a week. Prerequisite, Foods 1, or 2, 3 or 52, 53. Laboratory fee, \$10.00. Planning, preparing and serving meals for family groups, considering nutritional needs and management of money, time and labor; includes entertaining.

Foods 102. Experimental Foods. (3)

First semester. One lecture and two laboratory periods a week. Prerequisites, Foods 52, 53; Organic Chemistry, Chem. 31, 32, 33, 34. Laboratory fee, \$10.00. A study of food preparation processes from the experimental viewpoint.

Foods 104. Advanced Foods. (2-3)

First semester. Prerequisites, Foods 52, 53, Chem. 31, 32, 33, 34. Laboratory fee, \$3.00. The physical and chemical behavior of the basic food constituents in food preparation and processing; study of recent advances in those fields.

Foods 105. Foods of Other Countries. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Foods 1 or 2, 3, or 52, 53. Laboratory fee, \$10.00. Food preparation and food customs of the peoples of other countries.

NUTRITION

Nut. 110. Nutrition. (3)

First and second semesters. Prerequisites, Foods 2, 3, or 52, 53; Organic Chemistry, Chem. 31, 32, 33, 34 to precede or parallel, or consent of instructor. Laboratory fee, \$10.00. A scientific study of principles of human nutrition. Animal experimentation. Correction of nutritional deficiencies by dietary studies.

Nut. 111. Child Nutrition. (2)

First and second semesters. One lecture and one laboratory period a week. Prerequisites, Foods 1 or 2, 3, or 52, 53; Nut. 10 or 110. Laboratory fee, \$7.00. Principles of human nutrition applied to growth and development of children. Experience in a nursery school.

Nut. 112. Dietetics. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Nut. 110. Laboratory fee, \$10.00. A study of food selection for health; planning and calculating dietaries for children, adults and family units; methods of teaching food values and nutrition.

Nut. 113. Diet and Disease. (2)

Second semester, alternate years. Prerequisite, Nut. 110. Laboratory fee, \$3.00. Modifications of the normal adequate diet to meet the nutritional needs in treating certain diseases.

Nut. 114. Nutrition for Health Services. (3)

Second semester. Prerequisite, Nut. 10 or the equivalent. Laboratory fee, \$3.00. A study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds. For graduate nurses, dietitians, health teachers, and social workers.

Nut. 120. Advanced Nutrition. (3)

First semester. Prerequisites, Foods 53; Zool. 1; Biochem. 81, 82 or concurrent. Laboratory fee, \$3.00. The progress of nutrition as found in the results of current research, with emphasis on interpretation and application.

For Graduates

FOOD

Foods 200. Advanced Experimental Foods. (3-5)

Second semester. Two lectures and three laboratory periods a week. Laboratory fee, \$10.00. Selected readings of literature in experimental foods. Development of individual problem.

Foods 204. Recent Trends in Foods. (2-3)

First semester. Laboratory fee, \$3.00. Recent trends in the preparation, processing and marketing of foods.

Foods 210. Readings in Foods. (3)

Prerequisite, Foods 102, 104. A critical survey of literature on recent developments in food research.

Foods 220. Seminar. (1, 1)

First semester. Reports and discussions of current research in foods. Laboratory fee, \$3.00.

Food, Nutrition, and Institution Management

Foods 399. Research. (6)

First and second semesters. Laboratory fee, \$10.00. Credit in proportion to work done and results accomplished. Investigation in some phases of food which may form the basis of a thesis.

NUTRITION

Nut. 204. Recent Advances in Nutrition. (2-3)

Second semester. Laboratory fee, \$3.00. Factors that affect the nutritive value of food during production, cookery processes, holding practices, processing, packaging and storage.

Nut. 208. Recent Progress in Human Nutrition. (3)

Second semester. Laboratory fee, \$3.00. Recent developments in the science of nutrition with emphasis upon the interpretations of these findings for application in health and disease. Aids for the dietitian in creating a better understanding of nutrition among patients, students of graduate status and personnel, such as those in the dental and medical professions.

Nut. 210. Readings in Nutrition. (3)

First semester. Laboratory fee, \$3.00. Reports and discussion of outstanding nutritional research and investigation.

Nut. 211. Problems in Nutrition. (3-5)

Second semester. Laboratory fee, \$10.00. Experience in a phase of nutrition research which is of interest to the student. Use of experimental animals, human studies, or an extensive and critical survey of the literature.

Nut. 212. Nutrition for Community Service. (3)

First semester. Laboratory fee, \$3.00. Applications of the principles of nutrition to various community problems. Students may work on problems of their own choosing.

Nut. 220. Seminar. (1, 1)

First and second semesters. Reports and discussions of current research in nutrition.

Nut. 399. Research. (6)

First and second semesters. Laboratory fee, \$10.00. Credit in proportion to work done and results accomplished. Investigation in some phase of nutrition which may form the basis of a thesis.

For Graduates and Advanced Undergraduates

INSTITUTION MANAGEMENT

Inst. Mgt. 160. Institution Organization and Management. (3)

First semester. Prerequisites, Foods 52, 53; Nut. 110; Home Mgt. 150, 151 to precede or parallel. Vocational opportunities in the field of institution management; organization of food service departments. Planning of functional kitchens and selection of equipment for quantity food services. Field trips.

Inst. Mgt. 161. Institution Food Purchasing and Cost Control. (3)

Second semester. Prerequisites, Foods 52, 53; Nut. 10 or 110 or equivalent. Selection of food, method and units of purchase in large quantities. Budgets, food cost accounting and control. Field trips.

Inst. Mgt. 162. Institution Foods. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisites, Foods 52, 53; Nut. 10 or 110 or consent of instructor. Laboratory fee, \$10.00. Application of basic principles and procedures of food preparation to quantity food preparation. Standardizing recipes; menu planning for various types of food services; determination of food costs. Field trips.

Inst. Mgt. 164. Food Service Administration and Personnel Management. (2)

Second semester. Prerequisites, Inst. Mgt. 160, 161, 162 or the equivalent. Administrative policies, problems, and personnel management. Field trips.

Inst. Mgt. 165. School Food Service. (3)

First semester. Two lectures and one morning a week for practical experience in a school food service. Prerequisites, Foods 1 or 2, 3 or 52, 53, and Nut. 10 or 110, or consent of instructor. Not open to Institution Management majors. Study of organization, management, menu planning, food purchasing and preparation and cost control, for serving the noon meal in schools and child care centers.

Inst. Mgt. S166. Nutrition and Meal Planning. (2)

Summer only. Special application to group food services; school lunches, restaurants, and hospitals.

Inst. Mgt. S168. Cost Accounting for School Food Service. (2)

Summer session. Food cost accounting systems for school lunch programs; programs and procedures of accumulating, recording, and interpreting data for control.

Inst. Mgt. S169. Food Purchasing for School Food Service. (2)

Summer session. Purchasing procedures; grading, processing, and packing of food; selection of food, specifications, and marketing regulations.

For Graduates

Inst. Mgt. 200. Food Service Administration and Supervision. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Inst. Mgt. 162, 165, or the equivalent. Supervision and administrative policies; personnel management with emphasis on human relations, and philosophy underlying management practices.

HOME ECONOMICS—GENERAL

Professor: LIPPEATT.

Associate Professor: WILSON.

H. E. 1. Home Economics Orientation. (0)

First semester. Required of Home Economics freshmen. Orientation to the student activities and academic life of the University and to the field of home economics.

Home Management

Demonstrations, lectures, panels, group and individual discussions on personal and academic adjustment and on vocations open to persons trained in home economics.

H. E. 103. Demonstrations. (2)

Second semester. Two laboratory periods a week. Prerequisites, Clo. 20; Foods 1 or 2, 3; Tex. 1. Laboratory fee, \$10.00. Experience in planning and presenting demonstrations.

H. E. 190. Special Problems in Home Economics. (1-3)

Junior, senior or graduate standing and consent of instructor. Laboratory fee, \$3.00 to \$10.00, depending upon department and credit hours. Problem may be in any area of home economics and will carry the name of the subject matter of the problem.

For Graduates

H. E. 201. Methods of Research in Home Economics. (3)

First and second semesters. Prerequisite, Statistics or Tests and Measurements. (Ed. 151, Soc. 183, Agr. 100, or equivalent). Application of scientific methods to problems in the field of home economics with emphasis on needed research of an inter-disciplinary nature.

H. E. 202. Integrative Aspects of Home Economics. (2)

First and second semesters. Prerequisite, consent of instructor. Scope and focus of total professional field with emphasis on purposes and functions as related to family and other group living. Impact of the changing social, economic, technological and educational situation upon home economics.

H. E. 290. Special Topics. (1-6) Credit as arranged

First and second semesters. Summer session. Concentrated study in areas of home economics, such as: consumer problems: housing, interior design, and home furnishings; institution administration, and food service.

H. E. 399. Thesis Research. (1-6)

First and second semesters. Summer Session. 1-6 credits according to work accomplished.

HOME MANAGEMENT

Assistant Professor: ORVEDAL.

Instructor: SMITH.

Lecturer: MC GOVRAN.

Home Mgt. 150, 151. Management of the Home. (3, 3)

First and second semesters. Two lectures and one laboratory period. Home Mgt. 150 prerequisite to Home Mgt. 151. Laboratory fee, Home Mgt. 151, \$3.00. The philosophy and application of principles of scientific management in the home through the use of resources; management of time, energy, and money; introduction to housing as a social problem; housing to meet family needs, selection, care and use of household equipment.

*Home Mgt. 152. Experience in Management of the Home. (3)**

First and second semesters. Prerequisites, Home Mgt. 150, 151. Laboratory fee, \$10.00. Residence for one-third of a semester in the home management house. Experience in planning, coordinating and participating in the activities of a household, composed of a faculty member and a group of students. (See p. 4)

Home Mgt. 155. Money Management. (2)

Two lectures. Prerequisite, Home Mgt. 150 or permission from instructor. Integrating the use of money and other available resources to meet both individual and family wants and needs. Emphasis on areas of finance influencing family economic decisions.

Home Mgt. 156. Household Equipment. (2)

Two laboratory periods a week. Laboratory fee, \$3.00. Problems in selection, use and care of small and large equipment.

Home Mgt. 158. Special Problems in Management. (3)

Two lectures; one two-hour lab. Prerequisite, Home Mgt. 150, 151 or equivalent. Laboratory fee, \$3.00. Analysis of some of the important management problems in work simplification, problems related to housing and household equipment.

PRACTICAL ART AND CRAFTS

Professor: CURTISS.

Associate Professor: CUNEO.

Assistant Professors: COX, ELLIOTT, AND LONGLEY.

Instructor: WOODLOCK.

Lecturers: DAVIS, AND LEWIS.

Pr. Art 1. Design must be taken before or at the same time as any other course offered by the Department of Practical Art.

The Department of Practical Art reserves the right to retain one art problem from each student, from each class, for illustrative purposes; however, it will retain only such problems as are needed by the Department.

PRACTICAL ART

Pr. Art 1. Design. (3)

First and second semesters. Fee, \$3.00. Art expression through materials such as opaque water color, wet clay, colored chalk, and lithograph crayon which are conducive to freeing techniques. Elementary lettering, action figures, abstract design, three-dimensional design and general composition study. Consideration of art as applied to daily living.

*A charge of \$40.00 for food and supplies is assessed each student. Students who board at the University may receive a pro-rata refund of the established charge if the dining hall card is turned in during the period of residence in the home management house. Students not living in dormitories are billed at the rate of \$5.00 per week for a room in the home management house.

Practical Art and Crafts

Pr. Art 2. Survey of Art History. (2)

First and second semesters. Fee, \$3.00. A rapid survey of art, from prehistoric times to the twentieth century, showing the great human movements and art ideals which each period has reflected. Emphasis is given to residential architecture, furniture, accessories and costume and to the philosophy and significance of art in today's living.

Pr. Art. 3. Silk Screen Printing. (2)

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Original design using the silk screen process for brochure covers, book jackets, greeting cards, posters, salon prints and decorative textiles.

Pr. Art 4. Three-Dimensional Design. (2)

First semester. Two laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Abstract design emphasizing form, volume, depth and movement. Exploratory use of materials to stimulate resourcefulness, imagination and distinctive style.

Pr. Art 20. Costume Design. (3)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, 2. Fee, \$3.00. Clothing selection and designing in relation to personality, coloring, figure, changing fashions, and occasion. Original design rendered in transparent and opaque water color, soft pencil, chalk and India ink. A minimum of basic fashion figure drawing. Survey of the fashion industry, contemporary style, and historic costume.

Pr. Art 21, 22. Action Drawing. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Study of the human figure with emphasis upon action, proportion and balance. Development of techniques in soft pencil, lithograph pencil, chalk, transparent water color, and India ink.

Pr. Art 30 Typography and Lettering (3)

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Practice in hand lettering and recognition of type faces with application to layouts for advertisements, books and magazines. Elementary knowledge of printing processes including an understanding of type sizes and weights, leading, and copy fitting. Readings.

Pr. Art 38, 39. Photography. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Experimental effects with emphasis upon design in photography for advertising, display, periodicals, scientific recording and teaching. It is advisable for each student to have his own camera.

Pr. Art 40, 41. Interior Design. (1, 3)

First and second semesters. One and three laboratory periods a week. Prerequisites, Pr. Art 1, 2. Fee, \$3.00. Analysis of interiors as backgrounds for various personalities. Study of good and poor interiors. Original floor plans and wall elevations drawn to scale, rendered in color, and coordinated with fabrics. Consideration of family living. Readings.

CRAFTS

Cr. 2. Simple Crafts. (2)

Second semester. Two laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00.

Creative expression in clay modeling, paper or metal sculpture, plaster or wood carving, and finger weaving. Emphasis is given to inexpensive materials and tools and to techniques that can be pursued in the home or the informal recreation center.

Cr. 3. Creative Art Inspired by Primitive Art. (2)

Second semester, alternate years. Two laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Modern design based upon the study of vigorous primitive art of prehistoric, provincial and peasant peoples. Linoleum block printing, textile painting, wood burning.

Cr. 5. Puppetry. (3)

First semester, alternate years. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Making of marionettes and production of simple puppet shows. Valuable as a teaching, advertising, or recreational medium.

Cr. 20, 21. Ceramics. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Elementary clay sculpture and pottery making stressing good design in form, decoration and glaze.

Cr. 30, 31. Metalry. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Etching, sawing, soldering, raising, and enameling using copper and sterling silver. Good, original design is stressed.

Cr. 40, 41. Weaving. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art I. Fee, \$3.00. Creative weaving on harness looms, inkle looms and cards. Emphasis is placed upon good texture, pattern and color with relation to the purpose of each textile.

For Advanced Undergraduates and Graduates

PRACTICAL ART

Pr. Art 100, 101. Mural Design. (2, 2)

First semester, alternate years. Three laboratory periods a week. Prerequisites, Pr. Art 1, 21. Fee, \$3.00. Group and individual expression serving two types of objectives: temporary murals for the public schools developed from classroom study and rendered in colored chalk on wrapping paper; murals for permanent architectural decoration considering propriety to setting and rendered in oil paint, gouache, fresco, or mosaic. Brief study of civilization's use of murals. Trips to nearby murals having social significance.

Pr. Art 120, 121. Costume Illustration. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 20, 21. Fee, \$3.00. Fashion rendering emphasizing clothing structure, representation of materials and development of individual rendering technique. Development of techniques employing transparent water color, India ink, Craftint, Zipatone and Burgess process. Study of styles of contemporary fashion illustrators.

Pr. Art 124, 125. Individual Problems in Costume. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 20, 21, 120, 121. Fee, \$3.00. Advanced problems in fashion illustration or costume

Practical Art and Crafts

design for students who are capable of independent work. Program developed in consultation with the instructor.

Pr. Art 132. Advertising Layout. (2)

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 20, 30, 40. Fee, \$3.00. Designing of rough to finished layouts for advertisements for newspapers, magazines, packaging, brochures and other forms of direct advertising. Included, is the study of typography and illustration and their relationship to reproduction. Experience in use of the airbrush. Field trip.

Pr. Art 134, 135. Individual Problems in Advertising. (2-2)

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 20, 30, 40, 132. Fee, \$3.00. Advanced problems in advertising layout. Opportunity to build skills in one area or more of advertising design. Readings. Field trip.

Pr. Art 136. Display. (2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, 4, 30. Fee, \$3.00. Practice in effective merchandise display in cooperation with retail establishments. Study of other aspects of display through field trips, discussion and research.

Pr. Art 138. Advanced Photography. (2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, 38, 39. Fee, \$3.00. Advanced experimental effects emphasizing design in photography. Each student must have his own camera.

Pr. Art 142, 143. Advanced Interior Design. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 40, 41. Fee, \$3.00. Designing of rooms drawn in perspective and isometrics and rendered in water color. Coordination with fabrics, floor and wall finishes. Study of budgets, costs, and manufacturing techniques. Field trips.

Pr. Art 144, 145. Individual Problems in Interior. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 40, 41, 142, 143. Fee, \$3.00. Advanced problems in interior design for students who are capable of independent work. Students assume the role of interior decorator serving the needs of theoretical clients. Field trips.

CRAFTS

Cr. 102. Creative Crafts. (2-4)

Summer session. Daily laboratory periods. Prerequisites, Pr. Art 1 and permission of the instructor. Fee, \$3.00. Interests of the persons enrolled will determine the crafts to be pursued. Suggested: block printing, wood burning, crayon decoration, paper sculpture, clay modeling, metalry, weaving. Excellent for teachers, directors of recreation centers, and persons who desire an introduction to recreational crafts.

Cr. 120, 121. Advanced Ceramics. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 20, 21. Fee, \$3.00. Advanced techniques in clay sculptures and in building pottery on the potter's wheel. Study of glaze composition and calculation. Experimentation with several clay bodies.

Cr. 124, 125. Individual Problems in Ceramics. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 20, 21, 120, 121. Fee, \$3.00. Individual problems in clay sculpture and pottery making. Use of gas kiln fired in the medium cone range and experimental research in glazes and original textural effects.

Cr. 130, 131. Advanced Metalry. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 30, 31. Fee, \$3.00. Advanced applications of basic techniques in metal working and jewelry making. Introduction of ring making, stone setting and metal casting.

Cr. 134, 135. Individual Problems in Metalry. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 30, 31, 130, 131. Fee, \$3.00. Advanced problems in metalry and jewelry making. Supervised laboratory for students capable of independent work and research.

Cr. 140, 141. Advanced Weaving. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 40, Fee, \$3.00. Advanced weaving on four and eight harness looms stressing creative weaves in relation to functional use.

Cr. 144, 145. Individual Problems in Weaving. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 40, 41, 141. Fee, \$3.00. Advanced problems in creative weaving. Supervised laboratory for students capable of independent work and research.

TEXTILES AND CLOTHING

Professor: MITCHELL.

Assistant Professors: CROUTHAMEL, HEAGNEY AND WILBUR.

Instructor: YOUNG.

Lecturer: JOHNSON.

TEXTILES

Tex. 1. Textiles. (3)

First and second semesters. Two lectures and one laboratory period a week. Laboratory fee, \$3.00. Basic introduction to textile field. Study of textile fibers, evaluation of labeling on textiles, analysis and care of fabrics.

CLOTHING

Clo. 20. Clothing Construction. (3)

First and second semesters. Three laboratory periods a week. Prerequisite, Tex. 1 for home economics students. Laboratory fee, \$3.00. Interpretation and use of commercial patterns; fabric study; basic fitting and construction techniques.

Clo. 21. Pattern Design. (3)

First and second semesters. Three two-hour laboratory periods a week. Prerequisite, Clo. 20 and consent of Department. Laboratory fee, \$3.00. Pattern study, figure analysis and pattern alteration, development and adaptation of individual basic pattern, creation of original designs.

Textiles and Clothing

Clo. 22. Clothing Construction. (2)

First and second semesters. Two laboratory periods a week. Prerequisites, Tex. 1 and Clo. 20. Laboratory fee, \$3.00. Continuation of Clo. 20. To give additional experience in the use and adaptation of commercial patterns and for increased skill in construction techniques.

For Advanced Undergraduates and Graduates

TEXTILES

Tex. 100. Advanced Textiles. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Tex. 1. Laboratory fee, \$3.00. The intensive study of textiles from the fiber to the finished fabric, from the producer to the consumer. Analysis of fabric construction and serviceability features.

Tex. 101. Problems in Textiles. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisites, Tex. 100, Organic Chemistry. Laboratory fee, \$3.00. Individual experimental problems in textiles.

Tex. 102. Textile Testing. (3)

Second semester. Three laboratory periods a week. Prerequisite, Tex. 100. Laboratory fee, \$3.00. The theory of textile testing methods, the repeated use of physical and chemical testing, the interpretation of the data, and the presentation of the findings.

Tex. 105. Consumer Problems in Textiles. (3)

First and second semesters. Three lectures a week. Prerequisite, Tex. 1, or equivalent. Laboratory fee, \$3.00. Study of textiles from the consumer point of view for personal, household and institutional use. Evaluation of such textiles through analysis of comparison shopping, laboratory tests, survey of literature and field trips.

Tex. 108. Decorative Fabrics. (2)

First semester. Two lectures a week. Prerequisite, Tex. 1, or equivalent. Laboratory fee, \$3.00. Study of historic and contemporary fabrics and laces with analysis of designs and techniques of decorating fabrics.

CLOTHING

Clo. 120. Draping. (3)

First semester. Three laboratory periods a week. Prerequisites, Clo. 21, Clo. 122. Laboratory fee, \$3.00. Demonstrations and practice in creating costumes in fabrics on individual dress forms; modeling of garments for class criticism.

Clo. 122. Tailoring. (2)

First and second semesters. Two laboratory periods a week. Prerequisite, Clo. 21. Laboratory fee, \$3.00. Construction of tailored garments, requiring professional skill.

Clo. 123. Children's Clothing. (2)

First semester. Two laboratory periods a week. Prerequisites, Clo. 20, or equivalent. Laboratory fee, \$3.00. Children's clothing from the standpoint of age, health, beauty, economy and personality; development of original designs.

Clo. 124. Projects and Readings in Textiles and Clothing. (2)

First semester. Two lectures a week. Prerequisites, Clo. 120, Tex. 100. Laboratory fee, \$3.00. Analysis of wardrobe planning preparatory to the job situation; grooming as related to the college girl and to the job holder; survey of job opportunities in the field; special projects.

Clo. 125. Costume Draping. (3)

Second semester. Three two-hour laboratory periods a week. Prerequisite, Pr. Art 20 or consent of Department. Laboratory fee, \$3.00. By means of draping in fabrics on a form the development of costumes both historic and contemporary for specific needs, purposes and occasions. Consideration of fabric, line and color are an integral part of the work.

Clo. 126. Fundamentals of Fashion. (2, 3)

Second semester. Prerequisite, Clo. 120. Laboratory fee, \$3.00. Fashion history; current fashions, how to interpret and evaluate them; fashion show techniques; fashion promotion. The course includes oral and written reports, group projects, panel discussions and field trips.

Clo. 127. Apparel Design. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Clo. 120. Laboratory fee, \$3.00. The art of costuming; trade and custom methods of clothing design and construction; advanced work in draping, pattern design and/or tailoring with study of the interrelationship of these techniques.

Clo. 128. Home Furnishings. (3)

First and second semesters. Three laboratory periods a week. Prerequisites, Tex. 1, Clo. 20, or consent of instructor. Laboratory fee, \$3.00. Selection of fabrics for home and institutional furnishings; care and repair of such furnishings; custom construction of slip covers, draperies, bedspreads, refinishing and upholstering a chair.

For Graduates

Tex. 200. Special Studies in Textiles. (2-4)

First or second semester. Summer session. Laboratory fee, \$3.00. Advanced inquiry into uses, care, types and/or performance of textile materials either contemporary or historic, depending on interest of student(s); compilation of data through testing, surveys, museum visits and/or field trips; writing of technical reports.

Clo. 220. Special Studies in Clothing. (2-4)

First or second semester. Laboratory fee, \$3.00. Special areas of clothing are selected according to interest of student(s); consumer, design, functional aspects and/or evaluation and analysis studies are made of those areas. Reports may be written, oral or by group presentation.

Tex. and Clo. 230. Seminar. (1)

First and second semesters. Laboratory fee, \$3.00. The breadth and limit of the field of textiles and clothing are investigated; annotated bibliography is developed; one oral report is presented.

Tex. and Clo. 232. Economics of Textiles and Clothing. (3)

Second semester. Laboratory fee, \$3.00. Study of interrelationship of developments in

Home Economics Education

production, distribution and consumption of textiles and clothing affecting consumers and the market. Analysis of consumption trends as related to patterns of family living and population changes.

Tex. and Clo. 399. Research. (4-6)

First and second semesters. Laboratory fee, \$3.00. A research problem is selected by the student; thesis for partial fulfillment of the Master of Science degree is written.

HOME ECONOMICS EDUCATION*

For Advanced Undergraduates and Graduates

H. E. Ed. 102. Problems in Teaching Home Economics. (3)

First and second semesters. Required of seniors in home economics education. Prerequisite, H. E. 140. A study of the managerial aspects of teaching and administering a homemaking program; the physical environment, organization and sequence of instructional units, resource materials, evaluation, home projects.

H. E. Ed. 120. Evaluation of Home Economics. (3)

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use.

H. E. Ed. 140. Curriculum, Instruction, and Observation. (3)

First semester. Required of juniors in home economics education. The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observations in junior and senior high school home economics departments.

H. E. Ed. 148. Teaching in the Secondary School. (8)

First and second semesters. Prerequisite, H. E. Ed. 140 and 102 or 102 parallel. Fee, \$30. (Students who pay the \$12.00 Instructional Material Fee, will be billed an additional \$18.00 for the first course in practice teaching in any semester. Additional practice teaching courses in the same semester will be billed at the rate of \$30.00 per course.) Observation and supervised teaching in approved secondary school home economics departments in Maryland, the District of Columbia and Baltimore City. Eight weeks of practicum in two schools with both junior and senior high school classes. Students must reserve a half day in their schedule for the student teaching assignment.

H. E. Ed. 200. Seminar in Home Economics Education. (2)

First semester. General prerequisites must include graduate standing.

H. E. Ed. 202. Trends in the Teaching and Supervision of Home Economics. (2-4)

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices.

*For further information see College of Education Catalog.

ART EDUCATION*

Ed. 140. Curriculum, Instruction, and Observation. (3)

First and/or second semesters. Offered in separate sections for the various subject matter areas, namely, English, social studies, foreign language, science, mathematics, art education, business education, industrial education, music education, and physical education. Registration cards must include the subject-matter area as well as the name and number of the course. Graduate credit is allowed only by special arrangement. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation.

Ed. 148. Student Teaching in Secondary Schools. (2-8)

First and second semesters. Prerequisite, Ed. 140*. In order to be admitted to a course in student teaching, a student must have an overall grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. A review committee on student teaching will assist instructors in evaluating all special cases. Undergraduate credit only. Fee, \$30.00. (Students who pay the \$12.00 Instructional Materials Fee, will be billed an additional \$18.00 for the first course in practice teaching in any semester. Additional practice teaching courses in the same semester will be billed at the rate of \$30.00 per course). Application forms for this course must be submitted to the Director of Student Teaching not less than ninety days before registration. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of one semester is devoted to this work. For experienced teachers, some graduate students and students in physical education and music education who are planning a split student teaching assignment in elementary and secondary schools, the time and credit may be reduced.

*Art Education courses taught by Practical Art staff in cooperation with staff of College of Education. For further information see College of Education catalog.

FACULTY
1960-61
COLLEGE OF
HOME ECONOMICS

Administrative Officer

SELMA F. LIPPEATT, *Professor of Home Economics and Dean of the College of Home Economics.*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;
PH.D., Pennsylvania State University, 1953.

Professors

VIENNA CURTISS, *Professor of Practical Art*

Certificate, Parsons School of Design, 1930; B.A., Arizona State College, 1933;
M.A., Columbia University, 1935; ED.D., 1957.

T. FAYE MITCHELL, *Professor and Head of Department of Textiles and Clothing*

B.S., State Teachers College, Springfield, Missouri, 1930; M.A., Columbia University, 1939.

Associate Professors

PELA F. BRAUCHER, *Associate Professor of Food and Nutrition*

A.B., Goucher College, 1927; M.S., Pennsylvania State University, 1929.

HELEN I. BROWN, *Associate Professor of Institution Management*

B.S., University of Vermont, 1938; M.A., Columbia University, 1948; PH.D., Michigan State University, 1960.

GEORGE H. CUNEO, *Associate Professor of Practical Art*

B.S., Columbia University, 1945; M.A., 1949.

LEDA A. WILSON, *Associate Professor of Home Economics*

B.S., Lander College, 1943; M.S., University of Tennessee, 1950; ED.D., 1954.

Assistant Professors

ELIZABETH N. COLLINS, *Assistant Professor of Institution Management*

B.A., Pembroke College, 1921; M.S., Simmons College, 1947.

E. MAE CORNELL, *Assistant Professor of Food and Nutrition*

PH.B., University of Chicago, 1930; M.A., Columbia University, 1938.

CLELL M. COX, *Assistant Professor of Practical Art*

B.S., Ohio State University, 1940; M.S., 1947.

N. ELSIE CROUTHAMEL, *Assistant Professor of Textiles and Clothing*

B.S., Drexel Institute of Technology, 1947; M.S., Cornell University, 1952.

BARBARA ELLIOTT, *Assistant Professor of Practical Art*

B.F.A., Maryland Institute of Art, 1954; M.A., Columbia University, 1957.

EILEEN M. HEAGNEY, *Assistant Professor of Textiles and Clothing*

B.S., Pennsylvania State University, 1941; M.A., Columbia University, 1949.

EDWARD L. LONGLEY, JR., *Assistant Professor of Practical Art*

B.A., University of Maryland, 1950; M.A., Columbia University, 1953.

RUTH ORVEDAL, *Assistant Professor of Home Management*

B.S., Middle Tennessee State College, 1937; M.S., University of Tennessee, 1941.

JUNE C. WILBUR, *Assistant Professor of Textiles and Clothing*

B.S., University of Washington, 1936; M.S., Syracuse University, 1940.

Instructors

IVA HAMMEL, *Instructor in Food and Nutrition*

B.S., Louisiana Polytechnic Institute, 1929; M.E., Colorado State College, 1943.

BARBARA HOYT, *Instructor in Food and Nutrition*

B.S., Northwestern University, 1956; M.S., Iowa State University, 1960.

MARTHANNE SMITH, *Instructor in Home Management*

B.S., Carson Newman College, 1955; M.S., University of Tennessee, 1957.

PHYLLIS WOODLOCK, *Instructor in Practical Art*

B.S., Michigan State University, 1943.

ELEANOR F. YOUNG, *Instructor in Textiles and Clothing*

B.S., University of Maryland, 1955; M.S., 1958.

Lecturers

FREMONT DAVIS, *Lecturer in Practical Art*

LOUISE T. JOHNSON, *Lecturer in Textiles and Clothing*

B.S., University of Connecticut, 1936; M.S., 1952.

DOROTHY LEWIS, *Lecturer in Practical Art*

B.S., Syracuse University, 1943; M.S., 1947.

ISABELLE MCGOVAN, *Lecturer in Home Management*

B.S., Ohio State University, 1925; M.S., 1926.

Research Assistants

VIRGINIA T. DAWSON

B.A., Ohio State University, 1937; M.S., University of Maryland, 1939.

Faculty

GENEVIEVE C. WATKINS

B.S., University of Maryland, 1956.

Graduate Assistants

CLAIRE D. JAFFE

B.S., Pennsylvania State University, 1940.

JULIE NISONGER

B.A., Ohio State University, 1944.

HELEN THOMPSON

B.S., Iowa State University, 1940.

SUSAN WENDEBERG

B.S., Brooklyn College, 1957.

College of Home Economics Cooperating Staff Members

MABEL S. SPENCER, *Assistant Professor, Home Economics Education*

B.S., West Virginia University, 1925; M.S., 1946; ED.D., American University, 1959.

COLLEGE
of
PHYSICAL EDUCATION,
RECREATION AND
HEALTH

Catalog Series 1961-1962



UNIVERSITY OF MARYLAND

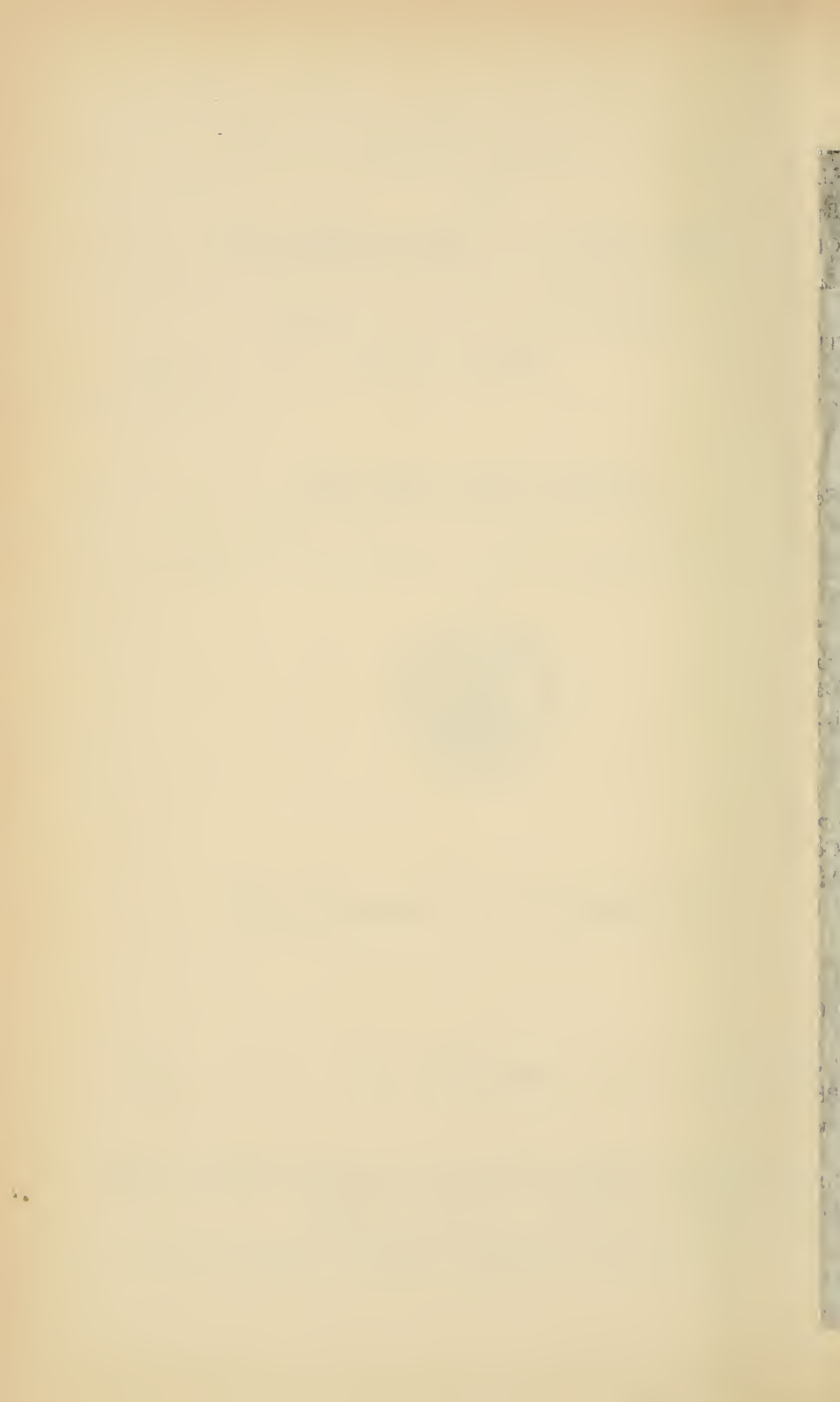
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UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26 } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> McCormick and Company, 414 Light Street, Baltimore 2	1966
EDWARD F. HOLTER <i>Vice-Chairman</i> The National Grange, 744 Jackson Place, N.W., Washington 6	1968
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WILLIAM C. WALSH Liberty Trust Building, Cumberland	1968
MRS. JOHN L. WHITEHURST 4101 Greenway, Baltimore 18	1967

Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

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B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936; D.PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1949.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

Emeritus

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women, Emeritus*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

Administrative Officers of the Schools and Colleges

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland, 1917.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930; Diplome le l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; PH.D., (HON.), University of Louisville, 1946.

General Administrative Officers

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

B. JAMES BORRESON, *Executive Dean for Student Life*

B.A., University of Minnesota, 1944.

DAVID L. BRIGHAM, *Director of Alumni Relations*

B.A., University of Maryland, 1938.

C. WILBUR CISSEL, *Director of Finance and Business*

B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.

HELEN E. CLARK, *Dean of Women*

B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; ED.D., Teachers College, Columbia University, 1960.

WILLIAM W. COBEY, *Director of Athletics*

A.B., University of Maryland, 1930.

LESTER M. DYKE, *Director of Student Health Service*

B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.

GEARY F. EPPLEY, *Dean of Men*

B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

HARRY D. FISHER, *Comptroller and Budget Officer*

B.S., University of Maryland, 1943.

GEORGE W. FOGG, *Director of Personnel*

B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. MCCARTNEY, *Director of University Relations*

B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*

B.S., University of Maryland, 1927; E.E., 1931.

HOWARD ROVELSTAD, *Director of Libraries*

B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*

B.S., University of Maryland, 1933.

Division Chairmen

JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*

B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.

HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*

B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

CHARLES E. WHITE, *Chairman of the Lower Division*

B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

ADOLF E. ZUCKER, *Chairman of the Division of Humanities*

B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

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COMMITTEE ON UNIVERSITY PUBLICATIONS

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COMMITTEE ON APPOINTMENTS, PROMOTIONS, AND SALARIES

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COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. G. Kenneth Reiblich (Law), *Chairman*

COMMITTEE ON COUNSELING OF STUDENTS

Dr. Harold F. Sylvester (Business and Public Administration), *Chairman*

COMMITTEE ON THE FUTURE OF THE UNIVERSITY

Dr. Augustus J. Prahl (Graduate School), *Chairman*

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STUDENT ACTIVITIES

Dr. Conrad Link (Agriculture), *Chairman*

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STUDENT PUBLICATIONS AND COMMUNICATIONS

Prof. Warren Strausbaugh (Arts and Sciences), *Chairman*

RELIGIOUS LIFE

Dr. Redfield Allen (Engineering), *Chairman*

STUDENT HEALTH AND SAFETY

Dr. M. H. Eyler (Physical Education), *Chairman*

STUDENT DISCIPLINE

Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krah1 (Medicine), *Chairman*

THE COLLEGE

THE COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH PROVIDES preparation leading to the Bachelor of Science degree in the following professional areas: physical education, dance, health education, recreation, and physical therapy. The College also offers special curricula in safety education and elementary physical education. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to the master's and doctor's degrees are available in physical education, health education and recreation. The College provides a research laboratory for faculty members and graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body, as well as determining methods and techniques of teaching various sports.

A two year required program of physical education is provided by this College for all men and women of the University, and a one year health education program for all freshman women. The College provides an extensive intramural sports program for both men and women.

In addition to its various on-campus offerings, this College regularly conducts courses in physical education, health education and recreation for teachers in various parts of the State of Maryland and conducts workshops for teachers wherever requested by school officials.

Facilities

The facilities of the College are unusual for a University of this size. Four separate buildings are used for the Women's Department, the Intramural Department, the Required Program for Men, and the Physical Education Teacher Education Program. There is also ample outdoor play space. Some of the facilities are shared with the Department of Intercollegiate Athletics.

INDOOR FACILITIES

THE STUDENT ACTIVITIES BUILDING. This building houses the offices of the Department of Intercollegiate Athletics and the College of Physical Education, Recreation, and Health. It contains six activity teaching stations: the main arena, the swimming pool, the small gym, the weight training room, the wrestling room, and combination indoor golf driving range and dance studio. In addition there are six classrooms, a research laboratory, a departmental library, and conference room.

The main arena of this building has a seating capacity of 12,004 and 19,796 sq. ft. of floor space. This area provides facilities for class work in basketball, volleyball, badminton, and bait casting.

The swimming pool is divided into two areas by a permanent bulkhead. The shallow end is 42 x 24 feet and the large area is 42 x 75 feet with a depth ranging from 4 to 13 feet.

Facilities

The small gymnasium may be used for basketball, volleyball, and gymnastics, including tumbling, trampolining and all types of apparatus work. The total floor space is 9,462 sq. ft.

The wrestling room (8,056 sq. ft.) is covered with mats.

The weight room is equipped with sufficient weights for ten lifting stations.

The dance studio - golf driving range (3,256 sq. ft.) has two nylon nets which provide four golf driving stations. In addition part of the floor is covered with a green rug for putting practice. The nets may be raised so that the entire floor space is available for dancing.

PREINKERT FIELD HOUSE. Preinkert Field House contains the offices of the Department of Physical Education for Women and Health Education for Women. Its main lounge serves as a study and recreational area for women students and as a meeting place for clubs sponsored by the Department. There is a regulation size swimming pool, 75 x 35 feet equipped with two one-meter diving boards. In the gymnasium, 90 x 50 feet, classes are held in badminton, volleyball, basketball, stunts and tumbling, apparatus and tennis. There are two large backboards used for indoor tennis practice. The adjacent classroom is used for all professional classes and contains audio-visual equipment. The dance studio, used for modern dance classes, is 40 x 60 feet.

In addition to the above areas, there are locker and shower rooms used by those enrolled in physical education and those participating in recreational activities and a small lounge for major students.

ARMORY. The Armory is used primarily for an extensive men's intramural program. It houses the offices of the Director of Intramurals and an athletic equipment room from which students may secure equipment for recreational purposes. The 28,800 sq. ft. of floor space has four full length basketball courts, with badminton and volleyball courts superimposed on them. This facility is also used as an indoor track, with an indoor vaulting, high and broad jump pits, a one-tenth mile track, and a 70 yard straightaway.

COLISEUM. The Coliseum is used as a supplementary facility for the intramural and required program of physical education for men and women. Included in the facilities are an equipment issue room, adequate shower and locker rooms for both men and women, a classroom, and office space for several of the men's and women's physical education staff.

The 6,555 square feet of floor space is used primarily for required co-educational classes in square and social dance and for intramural basketball. In addition to the one large basketball court, however, there are five badminton and two volleyball courts available for co-ed class instruction.

OUTDOOR FACILITIES

THE STADIUM. The stadium, with a seating capacity of 33,536 has a one-quarter mile cinder track with a 220-yard straightaway. Pits are available for pole vaulting and high and broad jumping. Immediately east of the stadium

are facilities for the shot put, discus and javelin throw. The College of Physical Education, Recreation, and Health use these facilities for required classes in track and field. Also east of the stadium are 13.1 acres devoted to three practice football fields, the baseball stadium, a practice baseball, lacrosse, and soccer field. The College uses these facilities for major skill classes in football, soccer, and baseball. West of the stadium are 11.3 acres devoted entirely to physical education out-door play fields. There are four combination soccer-touch football play fields, with complete goal posts, and four softball fields with wire backstops.

Surrounding the Armory are four touch football fields and eight softball fields, encompassing 18.4 acres. These fields, plus the four in the Fraternity Row horseshoe are used exclusively for intramurals.

Immediately west of the Cole Activities Building are eight all-weather tennis courts. A new modern 18-hole golf course has been opened. This 204-acre course includes two lakes, and an additional 5.8-acre golf driving range for instructional purposes. The golf driving range, equipped with lights, and the golf course greatly adds to our present recreational facilities.

The outdoor facilities adjacent to the Preinkert Field House include 8 hard-surfaced tennis courts, an archery range with space for ten targets, two softball diamonds, and combination hockey and soccer fields.

Research Laboratory

One of the important aspects of advanced study at the University of Maryland is research. To encourage research, the College of Physical Education, Recreation, and Health makes available to the student a spacious, well equipped research laboratory. Students and faculty alike are encouraged to make use of the laboratory and its facilities for the purpose of conducting their special research projects.

Cultural and Recreational Opportunities

Near the University of Maryland are found many points of cultural and recreational interest. In Washington, D. C. one may visit national shrines and museums, e.g., the Smithsonian Institute, the Medical Museum, etc., and also attend lectures, musical recitals and stage productions featuring outstanding personages. The Freer Gallery of Art and the Folger Shakespeare Library are located in Washington. Within from one to four hours traveling time by car one finds such points of historical and recreational interest as Mt. Vernon, Gettysburg, Harpers Ferry, Antietam, Annapolis, Monticello, Williamsburg, Jamestown, Yorktown, the Shenandoah Valley, Skyline Drive, Rehobeth Beach and Ocean City, Maryland. A number of Chesapeake Bay beaches and resorts can be reached from the campus within forty-five minutes. The University also makes available for recreational purposes, swimming pools, tennis courts, and similar facilities. During Summer School a special recreational program is conducted for all students; this includes sightseeing tours, group trips to summer stock stage productions, square dancing, musical events, sports tournaments, and movies.

General Information

General Information For All Students

ENTRANCE REQUIREMENTS

All students desiring to enroll in the College of Physical Education, Recreation, and Health must apply to the Director of Admissions of the University of Maryland at College Park.

Sixteen units of high school credit are required for admittance to this college. *Required* high school subjects are: four units of English, one unit of social science, and one unit of natural science. *Desirable* high school subjects include: algebra, plane geometry and additional natural and physical sciences. Other *acceptable* subjects include fine arts and trade and vocational subjects.

Satisfactory health and physical vigor are essential for persons pursuing a career in the areas of this College.

EXPENSES

Annual expenses of attending the University are approximately as follows: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.000 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students and is payable only once. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. *A charge of \$300.00 is assessed to all students who are non-residents of the State of Maryland.*

For students enrolled in the physical therapy curriculum the annual costs for the junior and senior years taken on the Baltimore campus include:

\$270.00 fixed charges; \$72.00 special fees; approximately \$500.00 board; lodging for women \$135.00 for a double room, \$180.00 for a single room. A charge of \$170.00 is assessed to all students who are non-residents of the State of Maryland.

Complete information regarding costs is available in the publication *An Adventure in Learning*.

AIR SCIENCE INSTRUCTION

All male students, unless specifically exempt under University rules, are required to take Basic Air Science training for a period of two years. The successful completion of these courses is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of Air Science training will be required to complete the course or to take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses, during their junior and senior years, which lead to a regular or reserve commission in the United States Air Force.

For further details concerning Air Science, refer to *University General and Academic Regulations*, a publication mailed in September and February of each year to all new undergraduate students.

FOR ADDITIONAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarship and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

COLLEGES LOCATED AT COLLEGE PARK:

Dean
(College in which you are interested)
The University of Maryland
College Park, Maryland

PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean
(School in which you are interested)
The University of Maryland
Lombard and Greene Streets
Baltimore 1, Maryland

Undergraduate Professional Curriculum

GUIDANCE

At the time of matriculation and first registration, each student is assigned to a member of the faculty of the College who acts as the student's academic adviser. This faculty member will be in physical education, recreation, health education or physical therapy, depending on the student's choice of curriculum. The student should confer regularly with his adviser prior to and at the time of each registration.

NORMAL LOAD

The normal load for students in this College is 17-19 credit hours per semester, including the credits for required Air Science for men. The requirements in physical education for men, and in physical education and health for women

Undergraduate Professional Curriculums

are fulfilled by professional courses in the College. The normal load for freshman and sophomore men is 19 credits; for women 17 credits. No student may register for more than 19 hours unless he has a "B" average for the preceding semester and approval of the Dean of the College.

ELECTIVES

Electives should be planned carefully, and well in advance, preferably during the orientation course the first semester, or with the student's academic adviser during the second semester. It is important to begin certain sequences as soon as possible to prevent later conflict. Electives may be selected from any department of the University in accordance with a student's professional needs. Those selected must meet with the approval of the adviser and the Dean of the College.

TRANSFER STUDENTS

Only students in good standing as to scholarship and conduct are eligible to transfer into this College from another college or university. Only courses applicable to his curriculum and passed with a grade of "C" or better will be transferred. Students wishing to transfer to this College from another college of this University are subject to the general University regulations on this subject, explained in the publication, *University General and Academic Regulations*.

FRESHMAN AND SOPHOMORE PROGRAMS

The work of the first two years in this College is designed to accomplish the following purposes: (1) provide a general basic or core education and prepare for later specialization by giving a foundation in certain basic sciences; (2) develop competency in those basic techniques necessary for successful participation in the professional courses of the last two years.

While much of the academic course work will be alike, the technique courses will vary considerably in the different curriculums. The core of University requirements should be completed in the first two years in such manner as to justify acceptance as a junior in the desired major. The technique courses must be satisfactorily completed, or competencies demonstrated before the student can be accepted for the advanced courses in methods and in student teaching. It is very important that each requirement be met as it occurs.

JUNIOR STATUS

Students are permitted to register for courses numbered 100 and above only after they have achieved junior status. Detailed information pertaining to junior status will be found in the *University General and Academic Regulations*.

STUDENT TEACHING

Opportunity is provided for student teaching experience in Physical Education

or Health Education, or Health and Physical Education. The student devotes eight weeks during either semester of his senior year to observation, participation, and teaching under a qualified supervising teacher in an approved junior or senior high school or in a combined program at the elementary and junior or senior high school levels in the vicinity of the University. The student progresses to gradual assumption of all of the responsibilities of the supervising teacher. A supervisor from the College of Physical Education, Recreation, and Health visits the student periodically and confers with both the student teacher and the supervising teacher, giving assistance when needed. To be eligible for student teaching, the student must have an accumulative point average of 2.3, must have satisfied the competency requirements in P.E. 61, 63, 65, and 67 (men), P.E. 40, 52, 54, 56, 58, 60, 62, 64, 66, 68, 76, and 78 (women), and must have completed the following courses: P.E. 100; P.E. 113 (men); P.E. 114, 116, 124, 126 (women). The student must obtain a grade of "C" or better in all professional courses in his curriculum, and he must register for P.E. 140, P.E. 190 and Ed. 145 concurrently with student teaching. Women must hold one officials rating. Those desiring to teach at the elementary level must have completed P.E. 55, P.E. 120, and P.E. 195.

DEGREES

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health, including Air Science and/or physical activities.

Each candidate for a degree must file a formal application with the Office of the Registrar eight weeks prior to the date of graduation.

CERTIFICATION

The Maryland State Department of Education certifies for teaching only when an applicant has a tentative appointment to teach in a Maryland county school. No certificate may be secured by application of the student on graduation. Course content requirements for certification are indicated with each curriculum. Certification is specifically limited to graduates who "rank academically in the upper four-fifths of the class and who make a grade of 'C' or better in student teaching." In order to insure the meeting of these requirements, students will not be approved for student teaching except as indicated below. A student intending to qualify as a teacher in Baltimore, Washington, or other specific situations should secure a statement of certification requirements before starting work in the junior year and discuss them with his academic adviser.

PROFESSIONAL CURRICULUMS

PHYSICAL EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum are considered to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. This basic training makes it possible for the student to select related areas, especially in the fields of biology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

EQUIPMENT

Students may be required to provide individual equipment for certain courses.

UNIFORMS

Suitable uniforms, as prescribed by the College, are required for the activity classes and for student teaching. These uniforms should be worn only during professional activities.

Men—During the freshman and sophomore years, men will wear red and black T-shirts, black trunks, white socks, gym shoes, supporter and sweat suit. During the junior year, men will purchase full length black pants with gold braid on side and a black jacket, which are required for student teaching.

Women—Tailored blue shorts, white shirt, ankle socks, and tennis shoes, dance leotard and skirt, and warm-up suit.

For Student Teaching—An appropriate teaching costume will be selected under the guidance of the supervisor of student teaching before the beginning of the junior year.

PHYSICAL EDUCATION CURRICULUM FOR MEN

*Freshman Year**

(Semester)

I II

Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government	3	..
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking.....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 50—Rhythmic Analysis and Movement	1	..
P. E. 59—Skills in Folk, Square and Social Dance.....	..	1
P. E. 61, 63—Sport Skills and Gymnastics	2	2
A. S. 1, 2—Basic Air Science.....	½**	2
Electives ¹	1	7
Total	14½	19

Sophomore Year

Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry)	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 65, 67—Sport Skills and Gymnastics	2	2
A. S. 3, 4—Basic Air Science.....	2	½
Electives	1	1
Total	18-19	16½

Junior Year

H. D. Ed. 100, 101—Principles of Human Development I, II. .	3	3
P. E. 77—Methods of Teaching Aquatics .....	..	2
P. E. 100—Kinesiology	4	..
P. E. 101, 103—Organization and Officiating in Intramurals..	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools	3	1
P. E. 123 or 125—Coaching Athletics	3	..
P. E. 180—Measurement in Physical Education and Health....	..	3
Hea. 50—First Aid and Safety .....	..	1
Electives ²	5	8
Total.....	19	19

*Students classified in Group 3 on Mathematics Entrance Test must take Math. 0.

**Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

P. E. 71 may be required, depending upon swimming ability of student.

¹Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, Psych. 1. Students electing Econ. 31 or 37, which cannot be taken before the sophomore year, must register for Hea. 40 the second semester of the freshman year.

²Every student in junior or senior year must elect either Hea. 120, P.E. 120, or Rec. 170.

Physical Education Curriculum

	Semester	
	I	II
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 160—Theory of Exercise	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in Secondary Schools ¹.....	..	8
Electives ²	15	..
	<hr/>	<hr/>
Total	18	17

PHYSICAL EDUCATION CURRICULUM FOR WOMEN

<i>Freshman Year</i> [*]		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government	3	..
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 40—Basic Body Controls	1	..
P. E. 50—Rhythmic Analysis and Movement	2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56—Skills and Methods in Folk and Square Dance....	..	1
P. E. 62, 64—Elementary Techniques of Sports and Gymnastics	2	2
Electives ³		2
	<hr/>	<hr/>
Total	15	16

*P. E. 72 may be required, depending upon swimming ability of student.

Students classified in Group 3 on Mathematics Entrance Test must take Math. 0.

¹The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools.) When Ed. 148 is scheduled, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently. This may be done either semester.

²Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

³Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, or Psych. 1. Students electing Econ. 31 or 37, which cannot be taken before the sophomore year, must register for Hea. 40 the second semester of the freshman year.

	Semester	
	I	II
<i>Sophomore Year*</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry)	3-4	..
Hea. 40—Personal and Community Health.....	..	3
P. E. 54—Dance Techniques	1	..
P. E. 58—Skills and Methods in Social Dance	1	..
P. E. 60—Dance Composition .....	..	2
P. E. 66, 68—Techniques of Sports	2	2
Total	17-18	17
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II..	3	3
P. E. 78—Methods of Teaching Aquatics.....	..	2
P. E. 82, 84—Officiating ¹	0	0
P. E. 100—Kinesiology	4	..
P. E. 114, 116—Methods in Physical Education for Secondary Schools	3	1
P. E. 124, 126—Practicum in Leadership	2	2
P. E. 180—Measurement in Physical Education and Health..	3	..
Hea. 50—First Aid and Safety .....	..	1
Electives ² .....	..	7
Total	15	16
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 160—Theory of Exercise	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in the Secondary Schools ³.....	..	8
Electives ²	12	..
Total	15	17

*P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

¹ Students must hold one officials rating to be eligible for student teaching.

² Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

³ The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Secondary Schools.) When Ed. 148 is taken, Ed. 145, P. E. 140 and P. E. 190 must be scheduled concurrently. This may be done either semester.

REQUIREMENTS FOR DEGREE IN PHYSICAL EDUCATION

Requirements for the Bachelor of Science degree in physical education in the College of Physical Education, Recreation, and Health are as follows:

<i>Men</i>	<i>Sem. Cr.</i>
Professional Physical Education courses (P.E. 30, 50, 59, 61, 63, 65, 67, 77, 100, 101, 103, 113, 115, 123, or 125, 140, 160, 180, 190)	39
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours)	15-16
Education courses as prescribed	17
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1, Econ. 31, 37, Psych. 1, or Phil. 1; G. & P. 1)	24
Specially prescribed requirements (Speech 7)	2
University requirements in Basic Air Science	* 5
Health courses as prescribed (Hea. 40, 50)	4
Electives (must include either P.E. 120; Hea. 120, or Rec. 170)....	27
Total	133-134

<i>Women</i>	
Professional Physical Education courses (P.E. 30, 40, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 78, 82, 84, 100, 114, 116, 124, 126, 140, 160, 180, 190)	45
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours)	15-16
Education courses as prescribed	17
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1, Econ. 31, 37, Psych. 1, or Phil. 1; G. & P. 1)	24
Specially prescribed requirements (Speech 7)	2
Health courses as prescribed (Hea. 40, 50)	4
Electives (must include either P.E. 120, Hea. 120, or Rec. 170)....	20-21
Total	127-129

MINOR IN PHYSICAL EDUCATION

20 semester hours in physical education and 4 semester hours in cognate areas.

REQUIRED COURSES

Men—P.E. 30; P.E. 61, 63, 65, 67, (2-6**); P.E. 113; P.E. 101 or 103.

Women—P.E. 30; P.E. 62, 64, 66, 68, (2-6**); P.E. 114, 116; P.E. 124, 126.

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

**Selection of courses will be made according to student's background.

ELECTIVE COURSES

Men and Women—P.E. 78, 100; P.E. 123; P.E. 125; P.E. 140; P.E. 160; P.E. 180; P.E. 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150; Rec. 170.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include P.E. 123 or P.E. 125 if planning to coach.

Note: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; P.E. 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

MINOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

There are two plans for a minor in elementary school physical education. Plan A is for students in the College of Physical Education, Recreation, and Health, and Plan B is for students outside the College of Physical Education, Recreation, and Health.

I. Plan A (for students in this College)

10 semester hours in elementary school physical education courses and 10 hours in cognate areas.

Required courses

P.E. 55, 57, 120, 195; Ed. 123 or Ed. 2, Section 1.

Elective courses

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

Student teaching

Students will be required to do 4 weeks of their 8 weeks student teaching at the elementary school level in physical education. (Ed. 149).

II. Plan B (for students outside this College)

13 semester hours in elementary school physical education courses and 10 hours in cognate areas.

Required courses

P.E. 55, 57, 120, 130, 195.

Elective courses

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

Dance Curriculum

RELATED FIELDS MINOR

This minor requires a minimum of 18 credit hours to be elected from any three of the four following areas:

- I. Health Education—6 hours
 - a. Hea. 120—Methods and Materials in Health Education.
 - b. Hea. 150—Health Problems of Children and Youth.
- II. Recreation—6 hours
 - a. Rec. 120—Program Planning
 - b. Rec. 170—General Fundamentals of Recreation
- III. Safety Education—6 hours
 - a. Hea. 70—Safety Education
 - b. Hea. 80—The Driver, His Characteristics and Improvement
- IV. Dance—6 hours *
 - a. P.E. 55
 - b. P.E. 54, 70, 80
 - c. P.E. 56, 58, 59
 - d. P.E. 50, 192

DANCE

With the increasing recognition of the importance and scope of dance in educational programs, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

The course of study provides general background knowledge in culture and foundation sciences as well as particularization in dance skills, theory and philosophy. Courses in music theory, acting and stagecraft answer additional needs for dance production planning. Students are urged to enrich their background in an interchange in creative arts in other departments of the University, and opportunity is given to serve as assistants in the non-professional program.

Through electives the program may be adapted to meet the interests of the particular student, combining dance with fine arts, physical education, recreation, theatre, speech therapy, nursery school-kindergarten education, psychology, elementary education.

The majors in dance have performance opportunities in the Dance Group which presents one major concert each year, and the Demonstration Group which performs on and off campus.

*Selection of courses will be made according to student's background and interests upon consultation with the dance adviser.

Additional dance experience is available in nearby Washington for the student who may wish to visit professional studios. Many opportunities are provided for students to meet outstanding artists in the field and to take part in symposia and workshops both on campus and in Washington. The proximity of Washington and the availability of the embassies affords many unique cultural experiences.

Appropriate adjustments will be made in the curriculum for men who wish to pursue a major in dance.

DANCE CURRICULUM

<i>Freshman Year</i> *	<i>(Semester)</i>	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
G. & P. 1—American Government	3	..
Zool. 1—General Zoology .....	..	4
Speech 8—Acting	3	..
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 40—Basic Body Controls	1	..
P. E. 50—Rhythmic Analysis and Movement	1-2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56, 58—Folk, Square, Social Dance	1	1
P. E. 62—Elementary Techniques of Sports	2	..
Hea. 40—Personal and Community Health .....	..	3
Electives ¹ .....	..	3-6
Total	16-17	15-18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or	3	3
Eng. 5, 6—Composition and English Literature.		
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
P. E. 54—Dance Techniques	1	..
P. E. 60—Dance Composition .....	..	2
Hea. 50—First Aid and Safety .....	..	1
Music 20—Survey of Music Literature; and		
Music 7—Theory of Music	3	3
Electives ²	0-3	0-3
Total	17	16-19

*P. E. 72 may be required, depending on the swimming ability of the student.

¹ Students must elect, in either the freshman or sophomore year, one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, Psych. 1, Economics may be taken in the sophomore year only.

² Students must elect one of the following: Pr. Art 1-Design, Art 15, Art 20.

Dance Curriculum

<i>Junior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
P. E. 70, 80—Intermediate and Advanced Dance.....	2	2
P. E. 100—Kinesiology	4	..
P. E. 114—Methods in Physical Education for Secondary Schools	3	..
P. E. 126—Practicum in Leadership .....	..	2
P. E. 182—History of Dance	3	..
P. E. 192—Percussion Accompaniment & Music for Dance ..	..	2
Speech 14, 15—Stagecraft	3	3
Phil. 153—Philosophy of Art .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Electives* .....	..	0-3
Total	18	15-18
<i>Senior Year</i>		
P. E. 110—Dance Production	3	..
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 184—Philosophy & Theory of Dance	3	..
P. E. 190—Administration and Supervision of Physical Educa- tion, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in the Secondary Schools ¹.....	..	8
Electives*	12	..
Total	18	17

REQUIREMENTS FOR DEGREE IN DANCE *

Requirements for the Bachelor of Science degree in physical education, with a major in dance are as follows:

College dance courses (P.E. 50, 52, 54, 56, 58, 60, 70, 80, 110, 126, 182, 184, 192)	24
Prescribed courses in related areas (P.E. 30, 40, 62, 100, 114, 140, 190; Music 7, 20; Speech 8, 14, 15; Phil. 153; Pr. Art 1, Art 15, or Art 20)	40
Prescribed Health Courses (Hea. 40, 50)	4
General requirements (Eng. 1, 2, 3, 4, or 5, 6; H. 5, 6; Soc. 1, Psych. 1, Econ. 31, 37 or Phil. 1; G. & P. 1)	24
Foundation Science Courses (Zool. 1, 14, 15)	12
Education courses as prescribed	17
Electives	11-21
Total	132-142

*P. E. 90 Workshop 1-6 credits required of dance majors.

¹When Ed. 148 is taken Ed. 145, P. E. 140, P. E. 190 must be scheduled concurrently. This may be done either semester.

MINOR IN DANCE

The minor in dance is adapted to meet the needs of students majoring in such areas as speech, music, art, nursery school-kindergarten education, psychology, elementary education, recreation, and physical education. Other combinations may be considered depending on the student's interest and background.

The minor shall consist of a significant group of courses totalling twenty semester hours. The required courses in the dance area will be chosen from the following: Skills in Modern Dance, P.E. 52, 54, 70, 80 (Beginning through Advanced); P.E. 56, 58, 55, Skills and Methods in Social, Folk and Square Dance, Elementary School Rhythmic Activities; P.E. 60, Composition and Methods; P.E. 50, Rhythmic Analysis and Movement; P.E. 110, Dance Production; P.E. 182, History of Dance; P.E. 192, Percussion and Music for Dance. Electives shall be selected from cognate areas depending on the student's major. All programs must be approved by the department adviser.

SUGGESTED MINORS FOR THE DANCE MAJOR

Music, physical education, recreation, split sociology-psychology, speech, and split recreation-sociology.

RECREATION

The increased amount of leisure time existent in our society because of the rapid development of modern civilization, and the imperative need for guidance in the wise use of that leisure time has made us cognizant of the need for trained recreation leaders.

This curriculum, therefore, is designed to meet the needs of students who wish to qualify for the many positions in the field of recreation, and the needs of those students who desire a background of culture and skills which will enable them to render distinct contributions to community life. The College draws upon various other departments and colleges within the University for courses to balance and enrich its offerings for its recreation major students.

Majors in recreation also have opportunity for observation and practical experiences in local recreation and agency programs, in those programs of metropolitan Washington and Baltimore, and in various programs of the Armed Forces.

RECREATION CURRICULUM FOR MEN

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man ¹	3	..
G. & P. 1—American Government .....	..	3
Speech 1—Public Speaking.....	..	3

¹ Econ. 31 or 37 may be substituted for Phil. 1 or Soc. 1 but may not be taken until the sophomore year.

Recreation Curriculum

	Semester	
	I	II
<i>Freshman Year (continued)</i>		
Speech 4—Voice and Diction.....	3	..
Zool. 1—General Zoology .....	..	4
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 50—Rhythmic Analysis and Movement	1	..
P. E. 59—Skills in Folk, Square, and Social Dance .....	..	1
P. E. 61, 63, 65, or 67—Sport Skills and Gymnastics ¹	2	2
Rec. 10—Recreation Orientation	0	0
A. S. 1, 2—Basic Air Science.....	½*	2
Electives	1	1
Total	15½	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Speech 10—Group Discussion .....	..	2
Zool. 14—Human Anatomy and Physiology (or Bot. 1—General Botany)	4	..
Hea. 50—First Aid and Safety .....	..	1
Pr. Art 1—Design.....	3	..
Hea. 40—Personal and Community Health .....	..	3
Rec. 30—History and Introduction to Recreation	2	..
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) .....	..	2-3
A. S. 3, 4—Basic Air Science.....	2	½
Electives	1	2-3
Total	18 16½-18½	
<i>Junior Year</i>		
Basic Academic Sequence ² (9 hours).....	3	6
Cr. 2—Simple Crafts	2	..
Music 16—Music Fundamentals for the Classroom Teacher...	3	..
P. E. 113—Methods and Materials for Secondary Schools....	3	..
Rec. 100—Co-recreational Games and Programs .....	..	2
Rec. 110—Nature Lore .....	..	2
Rec. 120—Program Planning	3	..
Soc. 2—Principles of Sociology .....	..	3
Psych. 1—Introduction to Psychology .....	..	3
Electives	2	2
Total	16	18

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹Choice of activities depends upon student's background and interest.

²The basic sequence encourages a student to pursue his minor in academic fields, possibly sociology-psychology.

Recreation Curriculum

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
P. E. 101—Organization and Officiating in Intramurals....	1	..
Rec. 140—Observation and Field Work in Recreation .....	..	5
Rec. 180—Leadership Techniques and Practices	3	..
Rec. 190—Organization and Administration of Recreation....	..	3
Soc. 118—Community Organization .....	..	3
Speech 113—Play Production.....	..	3
Electives	9	1-2
Total	<hr/> 16	<hr/> 18

RECREATION CURRICULUM FOR WOMEN

<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man ¹	3	..
G. & P. 1—American Government	3	..
Speech 1—Public Speaking .....	..	3
Speech 4—Voice and Diction.....	3	..
Zool. 1—General Zoology .....	..	4
Hea. 40—Personal and Community Health .....	..	3
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	..
P. E. 40—Basic Body Controls	1	..
P. E. 50—Rhythmic Analysis and Movement	1	..
P. E. 52—Modern Dance .....	..	1
P. E. 56, 58—Skills and Methods in Folk and Square Dance, Skills and Methods in Social Dance	1	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics ²	2	or 2
Rec. 10—Recreation Orientation	0	0
Total	<hr/> 17-19	<hr/> 15-17

¹Econ. 31 or Econ. 37 may be substituted for Phil. 1 or Soc. 1 but may not be taken until the sophomore year.

²Choice of activities depends upon student's background and interest.

Recreation Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Speech 10—Group Discussion.....	..	2
Hea. 50—First Aid and Safety .....	..	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics ¹	2	or 2
P. E. 72, 74, 76 or 78—Elementary, Intermediate and Ad- vanced Swimming and Diving; Methods of Aquatics ¹	1-2	or 1-2
Pr. Art 1—Design	3	..
Psych. 1—Introduction to Psychology .....	..	3
Rec. 30—History and Introduction to Recreation	2	..
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) .....	..	2-3
Zool. 14—Human Anatomy and Physiology (or Bot. 1—General Botany)	4	..
Total	15-19	14-19
<i>Junior Year</i>		
Basic Academic Sequence ² (9 hours).....	3	6
Cr. 2—Simple Crafts	2	..
Music 16—Music Fundamentals for the Classroom Teacher....	3	..
P. E. 114—Methods in Physical Education for Secondary Schools	3	..
Rec. 100—Co-recreational Games and Programs	2	..
Rec. 110—Nature Lore .....	..	2
Rec. 120—Program Planning	3	..
Soc. 2—Principles of Sociology	3	..
Speech 113—Play Production.....	..	3
Electives .....	..	3
Total	19	14
<i>Senior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Rec. 140—Observation and Field Work in Recreation .....	..	5
Rec. 180—Leadership Techniques and Practices.....	3	..
Rec. 190—Organization and Administration of Recreation....	..	3
Soc. 118—Community Organization .....	..	3
Electives	9	2
Total	15	16

¹ Choice of activities depends upon student's background and interest.

² The basic academic sequence encourages a student to pursue his minor in academic fields, possibly sociology-psychology.

REQUIREMENTS FOR DEGREE IN RECREATION

Requirements for the Bachelor of Science degree in recreation in the College of Physical Education, Recreation, and Health are as follows:

Men

College recreation courses (Rec. 10, 30, 40, 100, 110, 120, 140, 180, 190)	22
Prescribed courses in related areas (H. D. Ed. 100, 101, Cr. 2; Music 16; P.E. 30, 50, 59, (61, 63, 65, 67; any two), 101, 113; Pr. Art; Psych. 1; Soc. 2, 118; Speech 1, 4, 10, 113)	46*
Prescribed Health courses (Hea. 40, 50)	4
Prescribed foundation science courses (Zool. 1, 14; Bot. 1).....	8
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Phil. 1; G. & P. 1).....	24
Basic academic sequence.....	9
University requirements in Basic Air Science.....	5*
Electives	17
Total.....	134

Women

College recreation courses (Rec. 10, 30, 40, 100, 110, 120, 140, 180, 190)	22
Prescribed courses in related areas (H. D. Ed. 100, 101, Cr. 2; Music 16; P.E. 30, 40, 50, 56, 58 (62, 64, 66, 68, any two; 72, 74, 76 or 78), 114; Pr. Art 1; Psych. 1; Soc. 2, 118; Speech 1, 4, 10, 113).....	49
Prescribed Health courses (Hea. 40, 50).....	4
Prescribed foundation science courses (Zool. 1, 14; Bot. 1).....	8
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Phil. 1; G. & P. 1)	24
Basic academic sequence.....	9
Electives	17
Total.....	133

MINOR IN RECREATION

18 semester hours in recreation and 6 semester hours in cognate areas.

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

Health Education Curriculum

REQUIRED COURSES

10 hours in Rec. 30, 40, 120, 150, 170, 180, or 190; Rec. 100; Soc. 118.

6 hours of work in areas of the recreational skills—nature, arts and crafts, speech and dramatics—but *not* in the area of the student's major.

2 hours of work in the areas of swimming, sports and dance skills; (men)—P.E. 50, 59, 61, 63, 65, 67; (women)—P.E. 40, 50, 52, 54, 56, 58, 62, 64, 66, 68, 72, 74, 76, 78.

OR other courses approved by the student's adviser and the various departments involved, depending upon the student's interest and background.

ELECTIVE COURSES

6 hours in cognate areas of sociology, psychology, etc., on approval of the student's adviser.

RECOMMENDED ELECTIVE COURSES

Art 100, 101; C. Ed. 115, 116; Cr. 3, 5, 20, 21, 30, 31, 40, 41; Ed. 52, 147; Ind. Ed. 2, 9; Journ. 10; Music 1, 4, 5, 10, 15, 50; P.E. 180; Pr. Art 38 or 39; Psych. 121, 125, 126; R. Ed. 114; Soc. 13, 14, 62, 113, 131, 153; Speech 102, 129.

HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and childhood education.

HEALTH EDUCATION CURRICULUM FOR MEN

Freshman Year

	—Semester—	
	I	II
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life	3	..
G. & P. 1—American Government .....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking.....	2	..
Hea. 10—Orientation to Health Education .....	..	1
Hea. 30—Introduction to Physical Education, Rec., & Health	2	..
P. E. 1—Orientation to Physical Education	1	..
P. E. 3—Developmental and Combative Sports .....	..	1
Chem. 11, 13—General Chemistry	3	3
A. S. 1, 2—Basic Air Science	1½*	2
Electives	1	1

Total..... 15½ 18

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Hea. 40—Personal and Community Health	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 5—Team Sports and Aquatics	1	..
P. E. 7—Recreational Activities .....	..	1
A. S. 3, 4—Basic Air Science	2	½
Electives	3	1
Total	19	16½
<i>Junior Year</i>		
Microb. 1—General Microbiology	4	..
Microb. 108—Epidemiology and Public Health.....	..	2
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or		
Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education	2	..
Hea. 120—Methods & Materials in Health Education .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives	3	4
Total	17-18	18
<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction & Observation	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health		
Education	3	..
Ed. 145—Principles and Methods of Secondary Education	3	..
Ed. 148—Student Teaching in the Secondary Schools ¹	8	..
Electives .....	..	14
Total	17	17

¹When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

Health Education Curriculum

HEALTH EDUCATION CURRICULUM FOR WOMEN

	—Semester—	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature	3	3
Soc. 1—Sociology of American Life	3	..
G. & P. 1—American Government .....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking	2	..
Hea. 10—Orientation to Health Education .....	..	1
Hea. 30—Introduction to Physical Education, Rec., & Health	2	..
P. E. 2, 4—Orientation Activities, Swimming	1	1
Chem. 11, 13—General Chemistry	3	3
Electives	3	3
Total	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
H. 5, 6—History of American Civilization	3	3
Zool. 14, 15—Human Anatomy and Physiology	4	4
Hea. 40—Personal and Community Health	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 6, 8—Dance, Sports	1	1
Electives	3	3
Total	17	18
<i>Junior Year</i>		
Microb. 1—General Microbiology	4	..
Microb. 108—Epidemiology and Public Health .....	..	2
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or		
Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education	2	..
Hea. 120—Methods & Materials in Health Education .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives	3	4
Total	17-18	18

<i>Senior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Hea. 140—Curriculum, Instruction & Observation	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education	3	..
Ed. 145—Principles of High School Teaching	3	..
Ed. 148—Student Teaching in the Secondary Schools ¹	8	..
Electives .....	..	14
Total	17	17

REQUIREMENTS FOR DEGREE IN HEALTH EDUCATION

Requirements for the Bachelor of Science degree in health education in the College of Physical Education, Recreation, and Health are as follows:

<i>Men</i>	<i>Sem. Cr.</i>
Foundation science courses (Zool. 1, 14, 15; Microb. 1, 108; Chem. 11, 13)	24
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1).....	24
Other specified requirements (Speech 7; Psych. 1, 5; Nut. 10)....	11
Professional Health Education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Hea. 190).....	29
Education courses (H. D. Ed. 100, 101; Ed. 145, 148).....	17
University requirements in Basic Air Science.....	5*
University requirements in physical activity (P.E. 1, 3, 5, 7).....	4
Electives	21
Total.	135
<i>Women</i>	
Foundation science courses (Zool. 1, 14, 15; Microb. 1, 108; Chem. 11, 13	24
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1).....	24
Other specified requirements (Speech 7; Psych. 1, 5; Nut. 10)....	11
Professional Health Education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Hea. 190).....	29
Education courses (H. D. Ed. 100, 101; Ed. 145, 148).....	17
University requirements in physical activity (P.E. 2, 4, 6, 8)....	4
Electives	21
Total.	130

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

¹When Ed. 148 is taken Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

Minors

MINOR IN HEALTH EDUCATION

12 semester hours in health education and 12 semester hours in related areas.

REQUIRED COURSES

Hea. 2 and /or 4 or Hea. 40 (women); Hea. 40 (men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

ELECTIVE COURSES IN RELATED AREAS

6 semester hours of biological sciences and 6 semester hours of psychology or human development.

MINOR IN SAFETY EDUCATION

Students wishing to obtain a minor in safety education and become certified to teach Safety and Driver Education in junior and senior high schools should take the following courses: Hea. 50 (1), Hea. 60 (2), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3), and Hea. 145 (3); F. P. 104 (3), 105 (3).

MINORS IN OTHER AREAS

It is relatively easy for any student majoring in one curriculum of this College to complete the requirements for a minor in a cognate area of the College, as indicated after each major curriculum. Those who plan to teach in the public schools might wish to also qualify in an academic area. This is more difficult with the limited number of elective credits and must be planned carefully in advance. If it seems advisable, the Dean may waive certain required courses to allow development of a needed minor, or the student may be able to carry a heavier load than normal if his grade average permits.

Students majoring in physical education or health education should begin preparing for a teaching minor in a subject matter area during the sophomore year, if possible. Many opportunities exist in junior and senior high schools for a combination teacher of physical education and/or coach and a teacher of science, mathematics, history, etc. For a teaching minor, Ed. 140 should be taken in the minor field and student teaching should be split between the major and minor fields.

ENGLISH MINOR

A minor in English requires 26 semester hours. It includes 12 semester hours of composition and literature, 3 semester hours of advanced American literature, and 11 hours of electives. Electives must be chosen with the approval of the adviser and with the recommendations of the English Department.

MATHEMATICS MINOR

For minor in this area, 20 semester hours are required including the following courses: Math. 2—Solid Geometry (2); Math. 18, 19—Elementary Mathematical Analysis (5, 5), and Math. 20, 21—Calculus (4, 4). Students who have had solid geometry in high school or who pass satisfactorily an examination in this subject need not take Math. 2. Electives in mathematics are selected with the advice of the adviser.

SOCIAL SCIENCE MINOR

For a minor in this group, 24 semester hours are required as follows: History, 18 semester hours (including one year each of American and European history), economics, sociology, government, consumer education or geography, 6 semester hours.

SCIENCE MINORS

- A. General Science: 30 semester hours are required for a minor in general science including the following courses: Chem. 1, 3, General Chemistry (4, 4); Zool. 1, General Zoology (4); Bot. 1, General Botany (4); Phys. 1, 2, Elements of Physics (3, 3) or Phys. 10, 11, Fundamentals of Physics (4, 4). The remaining 6 or 8 semester hours will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies. Zool. 14 and 15 (4, 4) are approved courses.
- B. Biological Minor: 20 semester hours are required for a biological minor and will include the following courses: Zool. 1, General Zoology (4), Zool. 14, and 15, Human Anatomy and Human Physiology (4, 4); Chem. 1, General Chemistry (4); Bot. 1, General Botany (4).
- C. Minors of 20 semester hours are also offered in chemistry and physics. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics. Other courses will be chosen subject to the approval of the student's major adviser and the science department in which the student's interest lies.

SPEECH MINOR

A minor of 22 semester hours is offered in speech. The minimum requirements for this minor are 12 semester hours in addition to the 10 semester hours of departmental requirements in Speech 1, 2, 3, and 4. The 12 semester hours above the departmental requirements must include 6 semester hours of courses numbered 100 or higher. All programs for minors must be approved by the departmental adviser.

PHYSICAL THERAPY

This course of study as offered by the University of Maryland is approved by the Council on Medical Education and Hospitals of the American Medical Association and prepares the student to meet the qualifications for licensure of physical therapists.

The first two years of the curriculum are planned as studies in liberal arts and specific sciences, which are basic for courses taken in the last two years of specialization. The freshman and sophomore years are taken on the campus of the University of Maryland at College Park. The junior and senior years are taken on the campus of the University of Maryland at Baltimore, Department of Physical Therapy, School of Medicine. After completion of the senior year three additional months of supervised clinical experience are necessary in order to meet the national requirements for accreditation in this specialty. Upon the satisfactory fulfillment of the four year course a Bachelor of Science degree is awarded by the College of Physical Education, Recreation, and Health. At the satisfactory completion of the required months of clinical experience a Certificate of Proficiency in Physical Therapy is granted by the School of Medicine. For more detailed information, write to the Educational Administrator of the Physical Therapy Curriculum, School of Medicine, University of Maryland, Baltimore 1, Maryland.

FRESHMAN AND SOPHOMORE PROGRAM—COLLEGE PARK CAMPUS

<i>Freshman Year</i>	<i>(Semester—)</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature	3	3
Chem. 1, 3—General Chemistry	4	4
Zool. 1, 2—General Zoology and Advanced Zoology	4	4
Math. 10, 11—Algebra, Trigonometry and Analytical Geometry	3	3
Speech 7, 10—Public Speaking, Group Discussion.....	2	2
A. S. 1, 2—Basic Air Science	½*	2
P. T. 10, 11—Physical Therapy Orientation	0	0
Physical Activities	1	1
Electives	1-3	1-3
Total	18½	20

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

Physical Therapy Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature	3	3
Phys. 10, 11—Fundamentals of Physics.....	4	4
Zool. 20—Vertebrate Embryology .....	..	4
G. & P. 1—American Government	3	..
Psych. 1—Introduction to Psychology	3	..
Soc. 1—Sociology of American Life ¹ .....	..	3
A. S. 3, 4—Basic Air Science.....	2	½
P. T. 20, 21—Foundations of Physical Therapy	1	1
Physical Activities	1	1
Electives	1-3	1-3
Total	18	17½

JUNIOR AND SENIOR PROGRAM—BALTIMORE CAMPUS

Junior Year

Physiol. 22—General Human Physiology .....	..	5
Anat. 103 (a) & (b)—Human Anatomy	5½	3
Path. 105—Pathology .....	..	2
P. T. 106 (a) & (b)—Professional Relations, Ethics and Clinical Observation	½	½
P. T. 107, 108—Physical Therapy Theory and Technique I & II	2½	1½
P. T. 110 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions	1½	1
P. T. 155—Nursing Procedures Related to Physical Therapy..	1½	..
H. 5, 6—History of American Civilization	3	3
Ed. 90—Development and Learning	3	..
Psych. 5—Mental Hygiene .....	..	3
Total	17½	19

Senior Year

Psych. 161—Psychology of the Handicapped	1	..
P. T. 102—Physiology of Exercise	1	..
P. T. 104—Functional Anatomy	2½	..
P. T. 151—Therapeutic Exercise	5	..
P. T. 152—Rehabilitation .....	..	3
P. T. 153—Physical Therapy Theory and Technique III	3	..
P. T. 154—Interprofessional and Social Agencies Correlation..	..	1
P. T. 156—Current Literature .....	..	1
P. T. 157—Administration and Clinical Observation .....	..	1
P. T. 158 (a) & (b)—Clinical Experience	1	5
P. T. 160 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions	3	2
Total	16½	13

Clinical Experience—11 weeks, June, July and August

¹ May substitute Phil. 1, Econ. 31, or Econ. 37.

Physical Therapy Curriculum

REQUIREMENTS FOR DEGREE IN PHYSICAL THERAPY

Requirements for the Bachelor of Science degree in the College of Physical Education, Recreation, and Health, major in physical therapy, are as follows:

<i>Freshman and Sophomore Program—College Park Campus</i>		<i>Sem. Cr.</i>
Biological Science Courses (Zool. 1, 2, 20)	12	
Physical Science Courses (Chem. 1, 3; Phys. 10, 11)	16	
Mathematics Courses (Math. 10, 11).....	6	
Social Science Courses (Soc. 1 or Phil. 1 or Econ. 31 or Econ. 37; G. & P. 1; Psych. 1).....	9	
English Courses (Eng. 1, 2, 3, 4).....	12	
Physical Education Courses.....	4	
Speech Courses (Speech 7, 10).....	4	
Air Science Courses (A.S. 1, 2, 3, 4) Required of men.....	5*	
Professional Courses (P. T. 10, 11, 20, 21).....	2	
Total.....		70
<i>Junior and Senior Program—Baltimore Campus</i>		
Biological Science Courses (Anat. 103; Physiol. 22)	13½	
Medical Science Courses (Path. 105).....	2	
Social Science Courses (H. 5, 6; Psych. 5, 161).....	10	
Education Courses (Ed. 90).....	3	
Professional Courses (P. T. 102, 104, 106, 107, 108, 110, 151, 152, 153, 154, 155, 156, 157, 158, 160).....	37½	
Total.....		66
Grand Total		136

*Concurrently with A. S. 1 and 4 the student must carry an academic course designated by the Commandant as a suitable supplement to the air science program. Under usual circumstances the designated course will be a part of the student's regular curriculum.

GRADUATE STUDY

The College of Physical Education, Recreation, and Health offers course work in the areas of physical education, recreation and health education leading to the degrees of Master of Arts, Doctor of Education, and Doctor of Philosophy. Persons not interested in an advanced degree may take course work for purposes of teaching certification, renewal of certification, or professional growth. Within the three major areas—physical education, recreation, and health education—special study and research are available along the following lines: (1) Physical Education—elementary, secondary, higher education and research, administration, athletics, and dance; (2) Recreation—public and municipal, industrial, hospital, youth-serving organizations and agencies, outdoor education, camp administration, and higher education and research; (3) Health Education—elementary, secondary, higher education and research, safety education, and service organizations and agencies.

SPECIAL STUDY

Graduate students are encouraged to pursue advanced study along lines of their special interests. The wealth of research sources close to the University make such study possible. In addition, the College of Physical Education, Recreation, and Health places at the disposal of graduate students a modern, spacious, well-equipped research laboratory.

GENERAL REGULATIONS GOVERNING GRADUATE WORK

Persons wishing to pursue graduate study must first gain admittance to the Graduate School. Application blanks for this purpose can be obtained by writing to the Dean of the Graduate School. Admittance to Graduate School entitles one to enroll in courses numbered 200 and above and to pursue course work leading to an advanced degree. Courses numbered 200 or above are graduate courses whereas courses numbered from 100 to 199 are advanced undergraduate and graduate courses. Persons not admitted to the Graduate School may enroll as special students in courses numbered under 200. To be admitted for graduate study the applicant must:

- (1) be a graduate of an accredited college or university
- (2) have a "B" average or its equivalent in the major and related course work during the last two years of undergraduate work, or have demonstrated either at the University of Maryland or some other accredited institution the capacity to do graduate level work, and
- (3) have the necessary prerequisite course work with a minimum of 16 semester credit hours in the subject field in which the applicant wishes to specialize.

MASTER OF ARTS DEGREE

The Master of Arts degree is awarded for successful completion of a minimum of 30 hours of advanced study beyond the undergraduate level. The Master's

degree represents more than mere class attendance. It represents professional competency and the demonstrated ability to do critical thinking.

The student seeking the Master of Arts degree must declare a major subject field and a minor subject field. Twelve to fifteen credit hours will be in the major area and nine to twelve hours, depending upon the number in the major area, will be in the minor field. The remaining six hours are made available to the student in order that he may study, relatively intensely, any problem or topic in which he has a *special* interest. This study culminates in a written report—thesis.

The program for the Master's degree is relatively flexible with only one course. (P.E. 210), three credit hours, being required. All other course work is elective. The student in conjunction with an adviser works out a program of study fitting the student's special needs and interests. Early in the graduate program, before twelve credit hours are completed, the student is asked to take the qualifying examination. The purpose of this is to help the student and adviser to discover areas of strength and weakness. This provides information needed in planning the course of study. Upon completion of all course work, including the research project, the candidate undergoes a final oral examination which is directed primarily toward the student's research and reported findings.

Half-time graduate assistants working toward the Master's Degree should note that they may take only ten credit hours per semester during the fall and spring terms and six credit hours in Summer School. Consequently, a graduate assistant in order to obtain the Master's degree, must attend the University three full semesters; or two semesters and a summer session, and carry out part of the research project in absentia.

THE DOCTOR OF EDUCATION DEGREE

The Doctor of Education degree is a professional degree offered in conjunction with the College of Education. Persons who are interested primarily in administrative and teaching positions in public schools and related fields are encouraged to pursue this degree.

The degree is awarded for successful completion of a minimum of 90 hours of graduate credit and a demonstrated competency in the study and solution of problems related to the student's field of endeavor.

At least 30 class hours of the minimum of 90 hours must be taken on the College Park campus. The number of hours that can be transferred from another institution is subject to the decision of the Graduate Council. Each student is expected to select and carry to successful completion a research project of particular interest to him. This project is reported in the form of a thesis and may carry from six to nine hours of credit. In addition, each student must demonstrate his ability to translate two of the following three foreign languages: German, French, and Spanish. A demonstration of proficiency in statistics may be substituted for one foreign language and if a justifiable reason can be given any foreign language can be substituted for one of the three languages. In pursuing

the Doctor of Education degree, the candidate must select an area of major emphasis and area or areas of minor emphasis. Each candidate must take certain graduate background tests, and must successfully pass the following academic examinations: a six-hour preliminary examination taken relatively early in the program, a final written comprehensive examination covering the entire graduate course of study, and a final oral or written examination directed primarily towards the research project.

THE DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy degree is offered primarily for those persons interested in preparing themselves for positions in teaching and research on the college and university level. A *minimum* of 90 credit hours is required for this degree, plus the demonstrated ability to do scholarly work and research. At least thirty of the 90 hours must be taken on the College Park campus and the amount of credit that can be transferred from other institutions is subject to the decision of the Graduate Council. Each student must select and carry to completion a research project which may carry from 12 to 18 hours of credit. Course work must be planned on the basis of a major subject field and one or two closely related minor subject fields. In addition to class work, the student must demonstrate a reading proficiency in German and French or Spanish, and also successfully pass two examinations: (1) a comprehensive preliminary examination, taken before the last twelve hours of class work and (2) a final oral and/or written examination dealing primarily with the dissertation.

GENERAL ADVANCED STUDY

Students who are not seeking a degree, but are doing advanced study to fulfill some special need or renewal of teaching certification, are encouraged to select an adviser and to plan a program designed to help them best achieve their objectives. A professional diploma in education with a major in physical education, recreation or health education may be earned by successfully completing a minimum of thirty credit hours of advanced study beyond the Master's degree, and fulfilling other requirements stipulated by the College of Education.

PREREQUISITES FOR ADVANCED STUDY

The course prerequisite for advanced study in each of the three areas, physical education, recreation, and health are listed below. In certain instances, experience or equivalent courses may be substituted for the courses listed. Students who are deficient in only one or two subjects, but who, in undergraduate work, have demonstrated a high academic potential, may be admitted to graduate school on a provisional basis, with the understanding that the deficiencies will be made up as soon as practicable.

Graduate Study

The following courses, or their equivalents, are prerequisites for advanced study:

- A. Physical Education—human anatomy, physiology, principles of physical education, theory of exercise (physiology of exercise), kinesiology, adaptives (special physical education, therapeutics), measurement, methods of teaching, sports skills, administration, practice teaching (teaching experience), and human development (educational psychology).

Note: Courses shown in the brackets above are the equivalents of the courses after which they are shown. Measurement, administration, kinesiology and theory of exercise may be taken for graduate credit if they have not been taken on the undergraduate level. The student is expected to carry out a special term project in connection with an advanced undergraduate course, in order to have it count toward the graduate major.

- B. Recreation—psychology, sociology, principles of recreation, administration, basic sciences, recreational activities, and practical experience.
- C. Health Education—biological sciences, bacteriology, human anatomy, physiology, chemistry, psychology, measurement, administration, principles of health, and field work.

GRADUATE ASSISTANTSHIPS

A number of teaching and research assistantships are available to qualified individuals. These assistantships carry a stipend of \$1,800 for the academic year, and exemption from all fixed charges. Graduate assistants may carry up to ten hours of academic work. Persons interested in an assistantship should write directly to Dean L. M. Fraley, College of Physical Education, Recreation, and Health.

Persons interested in additional information concerning the graduate program should refer to the Graduate School Announcements.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designed by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates.

200 to 299: courses for graduates only.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

Physical education fee per semester (to be charged any student enrolled in any physical activity course), \$6.00.

PHYSICAL EDUCATION

P. E. 30. Introduction to Physical Education, Recreation, and Health. (2)

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.

P. E. 40. Basic Body Controls. (1)

First and second semesters. Three hours a week. Second semester arranged for benefit of transfers. Laboratory fee, \$6.00. This course is designed to acquaint the student with the fundamental principle and techniques of body movement, and to provide for practical application in sports, rhythmic and gymnastic activities. In addition, the course introduces balanced posture in standing, walking, sitting and work skills, as well as relaxation.

P. E. 50. Rhythmic Analysis and Movement. (1-2)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. The development of rhythmic sensitivity through an analysis of rhythm and its application to movement. Percussion instruments will be used.

P. E. 52, 54. Dance Techniques. (1, 1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Introduction to techniques of modern dance, with simple approaches to composition.

P. E. 55. Elementary School Rhythmic Activities. (2)

First and second semesters. Summer session. This course surveys the various types of rhythmic activities suitable for use in the elementary school. Basic rhythms, singing games, and folk and square dancing are considered in terms of their use at the various grade levels as well as the best accepted methods of teaching these activities.

P. E. 56. Skills and Methods in Folk and Square Dance. (1)

First and second semesters. One lecture and three laboratories a week. Laboratory fee, \$6.00. This course is designed to acquaint the student with basic skills in Folk and Square Dance and to give theory of class organization, analysis, teaching techniques, and practice in "calling" for junior and senior high school programs.

P. E. 57. Elementary School Skills and Self-Testing Activities. (2)

First and second semesters and summer. This course surveys the various types of skills and stunt and tumbling activities suitable for use in the elementary school. These activities are considered in terms of their use at the various grade levels as well as the best accepted methods of teaching.

P. E. 58. Skills and Methods in Social Dance. (1)

First and second semesters. One lecture and three laboratories a week. Laboratory fee, \$6.00. This course is designed to acquaint the student with basic skills in Social Dance and to give theory of class organization, analysis and teaching techniques for junior and senior high school programs.

P. E. 59. Skills in Folk, Square and Social Dance. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 50. Laboratory fee, \$6.00. This course is designed to acquaint the student with the basic skills in social, folk, and square dance for use in schools and recreational groups.

P. E. 60. Dance Composition. (2)

First and second semesters. Four hours a week. Laboratory fee, \$6.00. The study of dance content and relationship to form and style. Theory and laboratory problems in composition. Modern dance forms.

P. E. 61, 63. Sport Skills and Gymnastics. (2, 2)

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of skills in apparatus, calisthenics, cross-country, dual recreation activities, mass games and relays, soccer, touch football, track, tumbling, and volleyball.

P. E. 62, 64. Elementary Techniques of Sports and Gymnastics. (2, 2)

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of seasonal sports, stunts, tumbling, and gymnastic exercises.

P. E. 65, 67. Sport Skills and Gymnastics. (2, 2)

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of skills in basketball, baseball, football and wrestling.

P. E. 66, 68. Techniques of Sports. (2, 2)

First and second semesters. Six hours a week. Prerequisites, P. E. 40, 62, 64. Laboratory fee, \$6.00. Techniques of selected team and individual sports.

P. E. 70. Intermediate Modern Dance. (2)

First and second semesters. Four laboratory periods a week. Prerequisites, P. E. 52, 54 or permission of instructor. Laboratory fee, \$6.00. Modern dance techniques. Compositional problems.

P. E. 71. Elementary Swimming. (1)

First and second semesters. Laboratory fee, \$6.00. Progressive techniques and practice of elementary swimming. Course includes basic and intermediate swimming instruction.

P. E. 72. Elementary Swimming and Diving. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Progressive techniques and practice in the elementary phase of swimming and diving, designed to make the student self-sufficient in deep water.

P. E. 73. Advanced Swimming. (1)

First and second semesters. Prerequisite, P. E. 71, or equivalent. Laboratory fee, \$6.00. Progressive techniques and practice of advanced swimming skills, water stunts and survival swimming.

P. E. 74. Intermediate Swimming and Diving. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 72, or equivalent. Laboratory fee, \$6.00. Continuation of the techniques in P. E. 72 to include proficiency in the standard swimming strokes and the ability to perform a fully coordinated standing dive.

P. E. 75. Life Saving and Water Safety. (1)

First and second semester. Three hours a week. Prerequisites, P. E. 73, or equivalent. Laboratory fee, \$6.00. Progressive techniques and practice of life saving and water safety skills. Course includes the Senior Life Saving material of the American Red Cross and the Y.M.C.A. It is possible to secure the American Red Cross Water Safety Instructorship through this course.

P. E. 76. Advanced Swimming and Diving. (1)

First and second semesters. Three hours a week. Prerequisites, P. E. 72 and P. E. 74, or equivalent. Laboratory fee, \$6.00. Continuation of the techniques of P. E. 74, to include more advanced swimming strokes, fancy diving, water stunts, and life saving.

P. E. 77. Methods of Aquatics. (2)

First and second semesters. Three hours a week. Prerequisites, P. E. 73, or equivalent. Laboratory fee, \$6.00. This course is designed to train students for aquatic leadership in schools, camps, and clubs. Course includes teaching methods, administration, facilities and equipment.

P. E. 78. Methods of Teaching Aquatics. (2)

First and second semesters. One lecture and three laboratory hours a week. Prerequisites, P. E. 74, 76, or equivalents. This course is designed to prepare the students to teach swimming and diving, administer swimming pools, conduct recreational aquatic activities, and direct camp aquatic programs.

P. E. 79. Fancy Diving. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of fancy diving. Course will include work on the five categories of dives.

Physical Education

P. E. 80. Advanced Modern Dance. (2)

First and second semesters. Four laboratory periods a week. Prerequisites, P. E. 52, 54, or 10 or permission of the instructor. Laboratory fee, \$6.00. Continuation of P. E. 70 in more advanced form.

P. E. 82, 84. Officiating. (0, 0)

First and second semesters. One lecture and two laboratory hours a week. Techniques of officiating women's sports. Opportunities to qualify for local and national ratings in hockey, basketball, volleyball and softball.

P. E. 90. Workshop. (1)

First and second semesters. Three laboratory hours a week. Permission of instructor only. Laboratory fee, \$6.00. Planning, composition, and presentation of demonstrations. A total of 6 credits may be earned.

*For Advanced Undergraduates and Graduates **

**P. E. 100. Kinesiology. (4)*

First and second semesters. Summer session. Three lectures and two laboratory hours a week. Prerequisites, Zool. 1, 14, and 15, or the equivalent. The study of human movement and the physical and physiological principles upon which it depends. Body mechanics, posture, motor efficiency, sports, the performance of atypical individuals, and the influence of growth and development upon motor performance are studied.

P. E. 101, 103. Organization and Officiating in Intramurals. (1, 1)

First and second semesters. Six hours a week. Organizations, administration, and promotion of intramurals at various school levels. Types of tournaments, units of competition, handling of student leader personnel, etc.

P. E. 110. Dance Production. (3)

First and second semesters. Prerequisites, P. E. 52, 54, 60, 70, 80, or equivalent. Planning of group and individual choreography. Aspects of dance production such as staging, costumes, make-up for dancers, acquainting the student with elements of dance and theatre. Demonstration planning.

P. E. 113. Methods and Materials for Secondary Schools. (3)

First and second semesters. Prerequisites, P. E. 30, 50, 60, 61, 63, 65, 67. This course is designed to help the students acquire a knowledge of the application of methods which directly or indirectly influence teacher-pupil learning situations in physical education at the secondary school level. Students will be required to arrange time to work with a staff physical education instructor in order to gain some practical teaching experience. Class activities include discussions, reports, outside readings, and teaching demonstrations.

* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

P. E. 115. Methods and Materials for Secondary Schools. (1)

Second semester. Three laboratory hours per week arranged. Prerequisite, P. E. 113. This is a laboratory course designed to help the student acquire practical experience in the courses of the University required program. The student will be given the opportunity to observe and assist in teaching under the direct supervision of a regular staff member.

P. E. 114, 116. Methods in Physical Education for Secondary Schools. (3, 1)

First and second semesters. Three lectures a week. Prerequisites, P. E. 40, 62, 64, 66, 68. Application of educational philosophy and principles to class organization and teaching techniques in individual sports, recreational games, gymnastics, body mechanics, dance, and relaxation for junior and senior high school programs.

**P. E. 120. Physical Education for the Elementary School. (3)*

First and second semesters. Summer session. This course is designed to orient the general elementary teacher to physical education. Principles and practices in elementary physical education will be presented and discussed and a variety of appropriate activities will be considered from the standpoint of their use at the various grade levels.

P. E. 123, 125. Coaching Athletics. (3, 3)

First and second semesters. Two lectures and two laboratory hours a week. Methods of coaching the various competitive sports commonly found in high school and college programs.

P. E. 124, 126. Practicum in Leadership. (2, 2)

First and second semesters. One lecture and one three hour laboratory period a week. Prerequisites, permission of instructor. This course is designed to prepare the student for the student teaching experience by assisting in non-professional University classes. It also provides guidance in methods and materials of teaching in the junior and senior high schools.

P. E. 130. Fundamentals of Body Dynamics. (3)

First and second semesters. Summer session. This course is designed to acquaint the elementary teacher with the scientific principles of mechanical-anatomical analysis and physiology of activities as they relate to physical growth and development.

P. E. S131. Coaching Basketball. (2)

Summer only. Methods of coaching basketball in high school and college.

P. E. S133. Coaching Football. (2)

Summer only. Methods of coaching football in high school and college.

P. E. 135. Coaching Swimming and Diving. (2)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. A thorough analysis of the techniques of coaching swimming and diving. Course includes a systematic treatment of the philosophy, historical development and psychological theories of coaching aquatics.

* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

P. E. 140. Curriculum, Instruction and Observation. (3)

First and second semesters. Prerequisites, men—P. E. 113; women—P. E. 114, 116, 124, 126. A course designed to provide directed observations and discussion, coordinating these experiences with those from previous methods courses in the development of curriculums for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

**P. E. 155. Physical Fitness of the Individual. (3)*

First and second semesters. Summer session. A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is open to persons outside the fields of Physical Education and Health.

**P. E. 160. Theory of Exercise. (3)*

First and second semesters. Summer session. Two lectures and two laboratory hours a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or the equivalent. A study of exercise and its physiological and kinesiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

**P. E. 170. Supervision in Elementary School Physical Education. (3)*

First and second semesters. Summer session. Prerequisite, P. E. 120. Principles and techniques of supervision are studied from a standpoint of their application in improving the learning situation in elementary school physical education. Strong emphasis will be given to the concept that modern supervision in elementary school physical education should be based on the application of fundamental democratic principles.

**P. E. 180. Measurement in Physical Education and Health. (3)*

First and second semesters. Summer session. Two lectures and two laboratory periods a week. Prerequisite placement in Group 1 or 2 on Mathematics Entrance test or Math. 0. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

P. E. 181. Advanced Training and Conditioning. (3)

Second semester. Two lectures and two laboratory hours a week. Prerequisites, Zool. 14, 15; P. E. 100. The training and physical conditioning of athletics. Treatment of athletic injuries by taping, massage, hydro-therapy, physical therapy, and electro-therapy. Remedial and conditioning exercises. Theory and practice.

* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**P. E. 182. History of Dance. (3)*

First and second semesters. The development of dance from primitive to modern times and the relationship of dance forms to patterns of culture. A historical survey of the changing place of dance in civilization. Research problems.

**P. E. 184. Theory and Philosophy of Dance. (3)*

First and second semesters. The study of the basic theories and philosophies of dance. Investigation of form, content and structure in dance and in relationship to other arts. The role of dance in education.

**P. E. 189. Field Laboratory Projects and Workshop. (1-6)*

First and second semester. Summer session. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

**P. E. 190. Administration and Supervision of Physical Education, Recreation, and Health. (3)*

First and second semesters. Summer session. The application of the principles of administration and supervision to Physical Education, Recreation, and Health. This course must be taken during the semester in which the student is doing student teaching.

**P. E. 191. The Curriculum in Elementary School Physical Education. (3)*

First and second semesters. Summer session. Prerequisite, P. E. 120. Curriculum planning and construction is considered from a standpoint of valid criteria for the selection of content in elementary school physical education. Desirable features of cooperative curriculum planning in providing for learning experiences will be presented and discussed.

P. E. 192. Percussion Accompaniment and Music for Dance. (2)

First and second semesters. One lecture and two laboratory hours per week. Techniques of percussion playing and its use as dance accompaniment are emphasized. Learning to use the instruments in composition and improvisation is stressed. Music for dance and dance notation is included in the course. Percussion scores.

**P. E. 195. Organization and Administration of Elementary School Physical Education. (3)*

First and second semesters. Summer session. Prerequisite, P. E. 120. This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

*Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**P. E. 196. Quantitative Methods. (3)*

First and second semesters. Summer session. A course covering the statistical techniques most frequently used in research pertaining to Physical Education, Recreation, and Health Education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

For Graduates

P. E. 200. Seminar in Physical Education, Recreation, and Health. (1)

First and second semesters. Summer session.

P. E. 201. Foundations in Physical Education, Recreation, and Health. (3)

First and second semester. Summer session. A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

P. E. 202. Status and Trends in Elementary School Physical Education. (3)

First and second semesters. Summer session. An analysis of the current status and implications for future trends in physical education at the elementary school level. Open to experienced persons in all phases of education.

P. E. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)

First and second semesters. Summer session. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

P. E. 204. Physical Education and the Development of the Child. (3)

First and second semesters. Summer session. An analysis of the place of physical education in meeting the growth and developmental needs of children of elementary school age.

P. E. 205. Analysis of Contemporary Athletics. (3)

First and second semesters. Summer session. A study of current problems, practices and national issues of permanent importance to the conduct of athletic competition in a democracy.

P. E. 210. Methods and Techniques of Research. (3)

First and second semesters. Summer session. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

P. E. 215. Principles and Techniques of Evaluation. (3)

First and second semesters. Summer session. Prerequisite, an introductory course in measurement or permission of the instructor. A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical education in schools and colleges. Specific problems concerning evaluation, brought in by members of the class, will be analyzed.

P. E. 230. Source Material Survey. (3)

First and second semesters. Summer session. A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

P. E. 250. Mental and Emotional Aspects of Sports and Recreation. (3)

First and second semesters. Summer session. Prerequisites, psychology and/or human development. An exploration of psychological aspects of physical education, sports and recreation, including personality dynamics in relation to exercise and sports, psychological factors in athletic performance and coaching, and applications of principles of motor learning.

P. E. 280. Scientific Bases of Exercise. (3)

First and second semesters. Summer session. Prerequisites, Anatomy, Physiology, P. E. 100, 160, or equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

P. E. 287. Advanced Seminar. (1-2)

First and second semesters. Summer session. Prerequisite, P. E. 201, or Hea. 220, or equivalent, or permission of the instructor. This course is a study of the current problems and trends in the selected fields of Physical Education, Recreation, and Health.

P. E. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)

First and second semesters. Summer session. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

P. E. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)

First and second semesters. Summer session. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

P. E. 291. Curriculum Construction in Physical Education and Health. (3)

First and second semesters. Summer session. A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

P. E. 399. Research—Thesis. (1-5)

First and second semesters. Summer session. Students who desire credits for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

RECREATION

Rec. 10, 11. Recreation Orientation. (0, 0)

First and second semesters. Through occasional class sessions and attendance at various meetings on and off campus, those majoring in recreation will have an opportunity to become acquainted with their fellow students, with the organizations in the field, their leaders and activities, and with the broad scope of recreation and its various divisions and interests.

Rec. 30. History and Introduction to Recreation. (2)

First and second semester. An introduction to the beginnings, growth, and possibilities in recreation as presently fostered by individuals, agencies and governments; attitudes toward and theories of play; historical events and figures; present principles and objectives; organizations and groups interested in recreation, and their relationships; job opportunities, specifications and demands; self analysis of individual student interests, limitations and capabilities in light of these specifications and demands.

Rec. 40. Camp Counseling and Administration. (2)

First and second semesters. A study of the philosophy and techniques of camp counseling including the qualifications, responsibilities and skills involved; the basic organization, administration and program planning practices and problems of camping as a whole; the relationship of these practices and problems to the counselor and his or her probable success. Outdoor skills will be taught and practiced insofar as possible.

*For Advanced Undergraduates and Graduates **

Rec. 100. Co-recreational Games and Programs. (2)

First and second semesters. Summer session. Compilation and sampling of the techniques for use in low organization and party games and activities. Emphasis is placed upon those activities of value to a recreation leader or teacher, and upon the placement, sequence and variation of such activities for all age levels and interests.

Rec. 110. Nature Lore. (1-2)

Second semester. An overall orientation course conducted in conjunction with the National Park Service of Washington, D. C., and covering various of the areas of physical and biological sciences; rocks, trees, animals, birds, flowers, etc. Two credits will be granted those students completing the maximum requirements of the course including local evening lectures, Saturday and/or Sunday observations, the Saturday Outdoor Leadership Workshop (24 hours), and periodic class meetings held at the University of Maryland.

**Rec. 120. Program Planning. (3)*

First and second semesters. Prerequisite, Rec. 30 or 170. Study of the various aspects, problems and practices of family, agency and governmental recreation programs and their planning, with particular emphasis on playground-community and teen-age center plans and procedures. This course should be of interest and value to those students planning to do part-time summer playground work.

*Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

Rec. 140. Observation and Field Work in Recreation. (5)

First and second semesters. Included are observation and field work at various of the facilities available; particular emphasis will be placed on whatever observations may be needed to complete coverage of the various opportunities; field work opportunities themselves will be selected and assigned on the basis of student interest and future job plans.

**Rec. 150. Camp Management. (3)*

First and second semesters. Summer session. An advanced camping course for those students with previous training and experience; organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

Rec. 170. General Fundamentals of Recreation. (3)

First and second semesters. This course is designed for students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, personality and leadership techniques, organization and administration, and interrelationships with other fields.

**Rec. 180. Leadership Techniques and Practices. (3)*

First and second semesters. A study of the various kinds of levels of leadership exerted by professional and semi-professional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of practical experiences in handling on and off campus groups.

Rec. S184. Outdoor Education. (6)

Summer only. A full-time program for teachers, administrators, recreation leaders, and social workers in functionalized child development through utilization of the surrounding natural environment and resources. Guided group work implements the acquired techniques for use with children in developing education in democratic living, worthy use of leisure, certain character traits and also for vitalizing such subject-matter areas as mathematics, language arts, social and natural sciences, music, health and physical education, graphic and plastic arts.

**Rec. 189. Field Laboratory Projects and Workshop. (1-6)*

First and second semesters. Summer session. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**Rec. 190. Organization and Administration of Recreation. (3)*

First and second semesters. Summer session. A study of the organizational patterns and administrative problems involved in the various kinds of operating recreation groups and agencies; forms of organization; finance and budgets; personnel; areas, facilities, and equipment; public relations.

**Rec. 196. Quantitative Methods. (3)*

First and second semesters. Summer session. A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

For Graduates

Rec. 200. Seminar in Physical Education, Recreation, and Health. (1)

First and second semester. Summer session.

Rec. 201. Foundations of Physical Education, Recreation, and Health. (3)

First and second semesters. Summer session. A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

Rec. 202. Philosophy of Recreation. (2)

First and second semesters. Summer session. A study of the meanings, relationships, and services of recreation as expressed by past and present authorities and leaders. This course should be of interest to people active in education, social work and related fields.

Rec. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)

First and second semesters. Summer session. A study of current concepts, principles and techniques of supervision and their application to the special fields indicated: observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

Rec. 204. Modern Trends in Recreation. (3)

First and second semesters. Summer session. A study of emphasis and recent developments in the recreation field as a whole and within its various specialized areas, making particular reference to the current and new literature.

Rec. 210. Methods and Techniques of Research. (3)

First and second semesters. Summer session. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

Rec. 230. Source Material Survey. (3)

First and second semesters. Summer session. A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

Rec. 240. Industrial Recreation. (3)

First and second semesters. Summer session. An introductory study of the philosophy of and practices and problems in industrial recreation. Where possible the course will include opportunities for observation and visiting specialists.

Rec. 260. Hospital Recreation. (3)

First and second semesters. Summer session. An introductory study of the philosophy of and practices and problems in hospital and institutional recreation. Where possible the course will include opportunities for observation and visiting specialists.

Rec. 287. Advanced Seminar. (1-2)

First and second semesters. Summer session. Prerequisites, P. E. 201, Hea. 201, Rec. 201, or Hea. 220, or permission of the instructor. This course is a study of the current problems and trends in the selected fields of physical education, recreation and health education.

Rec. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)

First and second semesters. Summer session. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

Rec. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)

First and second semesters. Summer session. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

Rec. 399. Research—Thesis. (1-5)

First and second semesters. Summer session. Students who desire credits for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

HEALTH EDUCATION

Hea. 10. Orientation to Health Education. (1)

First and second semesters. This course explores the field of health education in both the school and the community from the point of view of the health educator. Professional preparation and career opportunities are considered.

Hea. 30. Introduction to Physical Education, Recreation, and Health. (3)

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.

Hea. 40. Personal and Community Health. (3)

First and second semesters. Meaning and significance of physical, mental and social health as related to the individual and to society; important phases of national health problems; constructive methods of promoting health of the individual and the community; health problems of college students and young people with special emphasis on health knowledge for the future teacher.

Hea. 50. First Aid and Safety. (1)

First and second semesters. Standard and Advanced American Red Cross courses in first aid; safety in physical activities.

Hea. 60. Advanced First Aid. (2)

First and second semesters. Opportunity to secure Red Cross Advanced and Instructor's Certificate.

Hea. 70. Safety Education. (3)

First and second semesters. A study of the causes of accidents and methods of prevention, including principles of traffic and industrial safety.

Hea. 80. The Driver, His Characteristics and Improvement. (3)

First and second semesters. Summer session. Prerequisites, Hea. 50, 70. The aim of this study is to treat the driver-behavior problem in its relation to many of the psychophysical factors and forces in the traffic environment that impinge upon the man behind the wheel.

*For Advanced Undergraduates and Graduates**

Hea. 105. Basic Driver Education. (3)

First and second semesters. Summer session. Prerequisites, Hea. 50, 60, 70, 80. This course is a study of the place of the automobile in modern life and deals with the theory and practice of the following: traffic accidents and other traffic problems; objectives and scope of driver-education; motor vehicle laws and regulations; basic automobile construction and maintenance from the standpoint of safety, methods in classroom instruction; aids to learning and practice driving instruction.

Hea. 110. Introduction to School Health Education. (2)

First and second semesters. Summer session. Prerequisites, Hea. 2 and 4, or Hea. 40. This course deals with many aspects of school and community health programs, and the backgrounds and history of the services studied with their relationships to each other directly and indirectly. Various phases of healthful living are discussed as a part of school and community health. Special emphasis is placed upon the health service of both programs.

Hea. 120. Methods and Materials in Health Education. (3)

First and second semesters. Prerequisite, Hea. 40 or equivalent. This course considers various plans of teaching health in schools and elsewhere. Health education teaching methods and materials are evaluated with regard to their application to practical situations.

* Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

Hea. 140. Curriculum, Instruction and Observation. (3)

First and second semesters. Summer session. Prerequisites, Hea. 40, 110, 120. A course designed to provide directed observation and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

Hea. 145. Advanced Driver Education. (3)

First and second semesters. Summer session. Prerequisites, Hea. 50, 60, 70, 80, 105. Progressive techniques, supervision, and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies; program planning in driver-education; consumer education; resources and agencies; the teacher and driver-education; measuring and evaluating results; driver-education for adults; new developments in driver-education; insurance and liability, and the future of driver-education.

**Hea. 150. Health Problems of Children and Youth. (3)*

First and second semesters. Summer session. This course involves a study of the health needs and problems of pupils from the primary grades through high school. Physical, mental, and psychosomatic aspects of health are considered in relation to the developmental and school levels. Consideration is given to such topics as: diet selection and control; exercise, recreation and rest; emotional upset and its implications; and psychosexual development and problems. The role of the teacher and parent in encouraging optimal health is emphasized.

**Hea. 160. Problems in School Health Education in Elementary and Secondary Schools. (2-6)*

First and second semesters. Summer session. This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

**Hea. 170. The Health Program in the Elementary School. (3)*

First and second semesters. Summer session. Prerequisites, Hea. 2 and 4 or Hea. 40. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education. The total school health program is surveyed from the standpoint of organizing and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

**Hea. 178. Fundamentals of Sex Education. (3)*

This course is concerned with basic information regarding the physical, psychological, social, historical, semantic and comparative cultural aspects of sex. The adjustment

* Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

needs and problems of children and adults during the course of maturing and aging are studied; and special consideration is given to the sex education program in schools.

**Hea. 180. Measurement in Physical Education and Health. (3)*

First and second semesters. Summer session. Two lectures and two laboratory periods per week. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

Hea. 188. Children's Remedial Fitness Clinic. (1-4)

First and second semesters. Summer session. Prerequisite, at least junior standing in health, physical education and recreation, or by special permission of the director. An opportunity to acquire training and experience in a therapeutically oriented physical education-recreation program for children referred by various education, special education, medical and psychiatric groups.

**Hea. 189. Field Laboratory Projects and Workshop. (1-6)*

First and second semesters. Summer session. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in physical education, recreation, or health education under P. E. Rec., Hea., or Ed. 189 is six.

**Hea. 190. Administration and Supervision of School Health Education. (3)*

First and second semesters. Summer session. The application of the principles of administration and supervision to school health education. This course involves observation and field work in school and community health programs.

For Graduates

Hea. 200. Seminar in Physical Education, Recreation, and Health. (1)

First and second semesters. Summer session.

Hea. 201. Foundations in Physical Education, Recreation, and Health. (3)

First and second semesters. Summer session. A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

Hea. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)

First and second semester. Summer session. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

* Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

Hea. 210. Methods and Techniques of Research. (3)

First and second semesters. Summer session. A study of methods and techniques of research used in physical education, recreation and health education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

Hea. 220. Scientific Foundations of Health Education. (3)

First and second semesters. Summer session. A course dealing with an analysis of hereditary, physical, mental, and social factors which influence the total health status during the developmental process. The role of education in fostering physical and mental health is studied.

Hea. 230. Source Material Survey. (3)

First and second semesters. Summer session. A library survey course, covering the total areas of physical education, recreation and health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

Hea. 240. Modern Theories of Health. (3)

First and second semesters. Summer session. The purpose of this course is to familiarize advanced students in health education with modern theories of health and disease which involve so-called mind-body relationships. Major topics of study and analysis include the theories of psychosomatics, stress, hypnosis and constitutional psychology.

Hea. 250. Health Problems in Guidance. (3)

First and second semesters. Summer session. A course designed to familiarize guidance counselors with principles of health and with common deviations from health, especially during the school years. Implications of health for pupil effectiveness in the entire curriculum, including extra-class activities, are dealt with. Special attention is given to psychosomatic disturbances which are commonly an aspect of personal problem situations. Methods of dealing with health problems and utilizing available resources of school and community are discussed.

Hea. 260. Public Health Education. (3)

First and second semesters. Summer session. A course designed to acquaint the student with the structure, functions and major problems in public health; and with the role of education in public health.

Hea. 270. Status and Trends in Health Education. (3)

First and second semesters. Summer session. This course is concerned with analyzing the current status and implications for future trends in the various areas of health education.

Hea. 280. The Scientific Bases of Exercise. (3)

First and second semesters. Summer session. Prerequisites, Anatomy, Physiology, P. E. 100, P. E. 160, or the equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

Hea. 287. Advanced Seminar. (1-2)

First and second semesters. Summer session. Prerequisites, P. E. 201, Hea. 201, Rec.

Physical Therapy

201, or Hea. 220, or permission of the instructor. This course is a study of the current problems and trends in the selected field of physical education, recreation and health education.

Hea. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)

First and second semesters. Summer session. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

Hea. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)

First and second semesters and summer. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

Hea. 291. Curriculum Construction in Physical Education and Health. (3)

First and second semesters and summer. A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

Hea. 399. Research—Thesis. (1-5)

First and second semesters and summer. Students who desire credit for a master's thesis, doctoral dissertation, or a doctoral project should use this number.

PHYSICAL THERAPY

COLLEGE PARK CAMPUS

P. T. 10, 11. Physical Therapy Orientation. (0, 0)

First and second semesters. General introductory course to the professional field of physical therapy. Field trips to physical therapy departments in government and private agencies. Orientation of the student to job opportunities with their specifications and demands; self analysis of the students' capabilities and the major curriculum in light of such specifications and demands.

P. T. 20, 21. Foundations of Physical Therapy. (1, 1)

First and second semesters. Introduction to the development, growth and function of physical therapy and rehabilitation. A study of the national organization and the leaders in the field. Analysis of medical terminology and development of a field vocabulary.

For Advanced Undergraduates

BALTIMORE CAMPUS

Anat. 103. Human Anatomy. (8½)

First and second semesters. Prerequisites, Zool. 1, 2, 20. The student is given an opportunity to develop a basic concept of the morphology of the human body through a correlation of histology, gross anatomy and neuro-anatomy. Dissection of the human body including the brain is required.

Path. 105. Pathology. (2)

Second semester. Prerequisites, Anat. 103, Physiol. 22 taken concurrently. This course includes the study of the basic principles of disease and injury with their application to the various systems of the body. Special emphasis is placed on the locomotor system.

Physiol. 22. General Physiology. (5)

Second semester. Prerequisites, Zool. 1, 2; Chem. 1, 3. A course in the fundamentals of human physiology, including neurophysiology, the heart and circulation, respiration, digestion, the kidney and endocrine glands.

Psych. 161. Psychology for the Handicapped. (1)

First semester. Prerequisite, Psych. 5. This course is devoted to the consideration of human relations as applied to the practice of physical therapy. Emphasis is placed on observing, understanding and evaluating the personal and social factors affecting the handicapped.

P. T. 102. Physiology of Exercise. (1)

First semester. Prerequisites, Anat. 103, Physiol. 22. A consideration of the mechanism of muscular contraction and problems concerned with increasing efficiency of movement in motor activities and work.

P. T. 104. Functional Anatomy. (2½)

First semester. Prerequisites, Anat. 103, Physiol. 22. This course is primarily a consideration of the locomotor activity of the human body. It is designed to include observation and analysis of motion as it occurs in man under normal and pathological conditions.

P. T. 106. Professional Relations, Ethics and Clinical Observation. (1)

First and second semesters. A consideration of appropriate conduct related to personal and professional relations of the physical therapist.

P. T. 107. Physical Therapy Theory and Technique I. (2½)

(a) Massage

First semester. The theory, physiological effects and techniques of scientific massage as it is used in all aspects of physical therapy are discussed and administered.

(b) Hydrotherapy

First semester. The physics of water, cold and heat are reviewed. The various techniques of whirlpool, hot and cold applications, showers and underwater exercise in relation to various conditions are practiced and discussed.

(c) Bandaging

First semester. In this course one learns the principles and practice of bandaging with particular emphasis on bandages for support and conformity.

P. T. 108. Physical Therapy Theory and Technique II—Thermotherapy and Actinotherapy. (1½)

Second semester. The basic physics and physiological effects of heat and ultraviolet are discussed. The student practices the therapeutic application of infra-red and ultraviolet lamps, diathermy, microthermy and ultrasonics.

Physical Therapy

P. T. 110. Principles of Physical Therapy Applied to Medical and Surgical Conditions. (2½)

First and second semesters. This course presents to the students various conditions encountered in patients treated by the physical therapist. Specialists from various fields of medicine and surgery discuss the problems in their practice with emphasis on indications for various treatment procedures.

- A. Dermatology
- B. Medicine
- C. Psychiatry

P. T. 151. Therapeutic Exercise. (5)

First semester. A study of the principles and techniques of therapeutic exercise related to the prevention, correction and alleviation of disease and injury. This course includes manual muscle testing, muscle re-education, joint measurement, gait training and functional activities.

P. T. 152. Rehabilitation. (3)

Second semester. This course is designed to study the principles and practices employed in the comprehensive care and treatment program of the physically handicapped. It includes the evaluation of activities of daily living as well as the application and care of supportive devices.

P. T. 153. Physical Therapy Theory and Technique III. (3) *(a) Electrotherapy*

First semester. This course includes lectures, demonstrations and laboratory tests concerning the physical and physiological effects of low frequency, alternating and direct currents. The therapeutic and the diagnostic use of electricity is discussed and practiced.

P. T. 154. Interprofessional and Social Agencies Correlation. (1)

Second semester. Representatives of allied fields and of related social agencies participate in presentation of information and discussion of their specific roles in total patient care.

P. T. 155. Nursing Procedures Related to Physical Therapy. (1½)

First semester. This course serves to acquaint the student with bedside, aseptic and isolation techniques. Laboratory practice includes the application of bandages and splints, the dressing of wounds and methods of handling acutely ill and chronically disabled patients.

P. T. 156. Current Literature. (1)

Second semester. This course is designed to acquaint the student with professional and scientific literature. It affords experience in presenting reports and in group discussion.

P. T. 157. Administration and Clinical Observation. (1)

First semester. The organization and administration of a hospital and of a physical therapy department is presented.

P. T. 158. Clinical Experience. (6)

First and second semesters. During this period the student gains experience practicing physical therapy procedures in a hospital physical therapy department under the careful supervision of qualified physical therapists.

P. T. 160. Principles of Physical Therapy Applied to Medical and Surgical Conditions. (5)

First and second semesters. These lectures present to the students various conditions encountered in patients treated by the physical therapists. Specialists from various fields of medicine and surgery discuss the problems in their practice which are related to physical therapy with emphasis on indications for various treatment procedures.

- A. Gynecology and Obstetrics
- B. Neurology
- C. Physical Medicine and Rehabilitation
- D. Public Health
- E. Surgery
- F. Pediatrics
- G. Orthopedics

NON-MAJOR PROGRAM

Required Physical Education Courses For Men and Women

All undergraduate men and women students classified as freshmen or sophomores, who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education and/or athletics for a total of four semester hours of credit. The successful completion of these courses is required for graduation. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Students who are physically disqualified from taking these courses must enroll in adapted courses for which credit will be given. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first.

Students majoring or minoring in physical education, recreation, health education, physical therapy, or specializing in elementary school physical education and health education, may meet these requirements by special professional courses.

REQUIRED COURSES

P. E. Courses for men carry odd numbers—1, 3, 5, 7.

P. E. Courses for women carry even numbers—2, 4, 6, 8.

Co-ed classes are formed by combining men's and women's sections.

A student having a physical handicap which prevents participation in the regular required program will be assigned to an adapted activity suitable to his or her physical capacity. This refers to P. E. 1 to 8, inclusive.

Fees for all physical education courses will be \$6.00 per semester.

Equipment—Students may be required to provide individual equipment for some courses.

P. E. S10. Physical Education Activities. (1-6)

Summers only. Laboratory fee, \$6.00. Instruction and practice in selected sports; tennis, golf, and swimming.

Note. (1). Not available for credit to physical education majors.

Note. (2). Non-majors in physical education may use this credit to fulfill graduation requirements in physical education.

THE PROGRAM FOR MEN

The program of physical education for men offers the college student an opportunity to acquire skills, knowledges, and appreciations in a variety of physical and sport activities. Adequate participation now and in the future will contribute to more efficient physiological functioning, effective movement, improved human relations, and worthwhile use of leisure time.

Students are required to complete one unit of work in each of the following four courses.

P. E. 1. Orientation to Physical Education. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. The purpose of this course is to give the student a better understanding and appreciation of the place of sports and physical education in the American way of life. It is designed to introduce the student to the value of sports participation in each of the three areas: (1) Developmental and Combative Sports, (2) Team Sports and Aquatics, (3) Recreational Activities. This is accomplished through reading assignments, lectures, discussions, and by participation in a variety of sports in each area. In addition, each student is acquainted with the fitness, health, social, and leisure time values inherent in continued participation in sports and other physical education activities.

All entering freshmen are required to complete P.E. 1. *Orientation to Physical Education*. Students are then guided into an activity in each of the three areas indicated below. The selection of an activity is based upon the student's individual needs, interests, his past experience, and his level of fitness. Students who fail the swimming classification test, one of the *Orientation to Physical Education* requirements, are required to enroll in elementary swimming.

P. E. 3. Developmental and Combative Sports. (1)

First and second semesters. Three hours a week. Prerequisite, P.E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: apparatus; double tumbling and balancing; individual tumbling; track and field and wrestling; weight training, basic motor fitness.

P. E. 5. Team Sports and Aquatics. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: Elementary swimming; advanced swimming; life saving; water safety instructors course*; fancy diving; softball and basketball; speedball and flickerball; touch football and volleyball; soccer and volleyball.

P. E. 7. Recreational Activities. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: archery and bowling**; tennis and badminton**; camping and outdoor activities**; canoeing**; fishing**; sailing**; social dance**; square dance**.

*Prerequisite for this course: 18 years of age or older and hold a current Senior Life Saving Card.

**Some sections of these activities are co-ed.

Required Physical Education

COSTUME: Each male student enrolled in required physical education will be furnished a red and black reversible T-shirt, black trunks, socks, supporter, and towel. Gymnasium shoes, and for some classes, sweat clothes will be furnished by the student.

At the end of each semester or upon withdrawal from the University each student *must* return his clothing to the equipment custodian or he will be billed for all items of clothing missing, plus a \$2.00 penalty fee. In addition the College will not assume responsibility for student's personal clothing or his lock.

LOCKS AND LOCKERS: A basket is assigned each student upon presentation of his University fee receipt. During class time each student secures his clothing and basket in a locker.

THE PROGRAM FOR WOMEN

Through participation in a variety of activities, freshman and sophomore women have the opportunity to acquire skills, knowledge, and attitudes which will contribute to personal enjoyment and better physical efficiency. Students are required to complete one unit of work in each of the four areas. Activities within the specified areas may be selected according to individual interests and needs. Students are urged to develop new skills as well as to select those in which they would like to have further experience.

The areas are designated by specific numbers as follows:

P. E. 2. Orientation Activities. (1)

First and second semesters. Three hours a week. Required of all freshman women. Laboratory fee, \$6.00. This is a summary course designed to acquaint the student with the role of the College of Physical Education, Recreation, and Health at the University of Maryland. It includes the teaching of basic body mechanics as related to posture and sports skills. It helps the student understand the use of exercise and relaxation in relation to total fitness for her college life and for the future.

P. E. 4. Swimming. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Classification tests are given in swimming to determine the skill level of all students. Having taken this test each student may elect a course best suited for her own skills from the following: beginning, low intermediate, high intermediate, advanced, synchronized, diving, senior life saving, water safety instructors, methods of teaching aquatics.

Each course is designed to improve the skill of the individual, to increase enjoyment in swimming and to give an understanding of safety factors involved in swimming.

P. E. 6. Dance. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Students may elect one of the following: folk and square, social, beginning modern, intermediate modern, dance composition. This area offers the student a variety of opportunities in the field of dance. The courses included give instruction in skill, style, and the creative aspect of dance and are designed to increase enjoyment, appreciation and understanding of dance.

P. E. 8. Sports. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. This area includes team and individual sports, recreational games, and outdoor education. Students may elect from the following: archery, badminton, basketball, bowling, camping and outing, canoeing, fencing, fishing, golf, hockey, recreational games, riding (see note), sailing, softball, tennis, trampoline, stunts and tumbling, and volleyball. These courses are planned to improve the skill of the individual and to increase enjoyment as a spectator and/or a participant.

Note: A special fee of \$26.00 is charged for riding instruction.

PROFICIENCY EXAMINATION: There is one exception to the above departmental requirement. Any student who feels she is proficient in one or more areas will be given the opportunity to take an examination to prove this fact. If she chooses to take it and passes she is then permitted to acquire her four credit hours of Physical Education in any area she wishes.

COSTUME: Each woman student is expected to provide herself with gymnasium costume consisting of dark green gabardine shorts, white slip-over blouse, white socks and tennis shoes. Leotards are usually worn in modern dance classes. This is optional.

LOCKS AND LOCKERS: A locker and lock are assigned to each girl at the first meeting of her class upon presentation of her University fee receipt. At the close of the last class each one is held responsible for cleaning out her locker and returning the lock.

REQUIRED HEALTH EDUCATION COURSES FOR WOMEN

All freshman women are required to complete one semester of Personal Health (Hea. 2) and one semester of Community Health (Hea. 4) for graduation. Students who demonstrate proficiency in personal health on the classification test are exempt from Hea. 2. These courses must be taken in consecutive order with Hea. 2 taken first. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first. These semester courses are designed to meet the functional health needs and interests of college women. The basic units of instruction have been evolved from present day scientific backgrounds. It is hoped that through these health courses the student will be better able to develop correct attitudes, habits and knowledges that will facilitate a more effective type of everyday living. Audio-visual aids, readings, reports, field trips, guest speakers, and special lectures help to enrich the class discussions. The University environment, the personal and group adjustment which the students must make are considered to form the core of these courses.

Women who have reached their thirtieth birthday are exempt from these courses.

Student Organizations

Hea. 2. Personal Health. (2)

First and second semesters. A course concerned primarily with health knowledge, attitudes and skills as they apply to the individual. Here consideration is given to basic overall concepts of health, nutrition, mental health, and preparation for family living.

Hea. 4. Community Health. (2)

First and second semesters. A course designed to explore the magnitude of community health problems as they affect the individual. Basic units of instruction include chronic and communicable diseases, stimulants, and depressants, consumer health, problems of the aging, and health services on the local, state, national, and international levels.

Student Organizations Sponsored by the College

PHI ALPHA EPSILON: Honorary Society of the College of Physical Education, Recreation, and Health.

The purpose of this organization is to recognize academic achievement and to promote professional growth by sponsoring activities in the fields of physical education, recreation, health, physical therapy, and related areas.

Students shall qualify for membership at such time as they shall have attained junior standing in physical education, health, recreation, or physical therapy, and have a minimum overall average of 2.7 and a minimum professional average of 3.1. Graduate students are invited to join upon passing the Master's qualifying examinations.

The organization is open to both men and women.

WOMEN'S PROFESSIONAL CLUB: All women students enrolled in the College are eligible for membership in this organization. It conducts various professional meetings, brings in speakers and promotes various co-recreational activities. It has sponsored trips to District and National conventions of the American Association for Health, Physical Education, and Recreation, and is chartered as a student major club of that organization.

SIGMA TAU EPSILON: This society, founded in 1940, selects those girls who have attained an overall 2.5 average and demonstrated outstanding leadership, service and sportsmanlike qualities in the organization and activities of the Women's Recreation Association and its affiliated groups.

AQUALINERS: This synchronized swimming club is open to all men and women registered in the University. Through weekly meetings the group concentrates on additional stroke perfection, individual and group stunts, diving, and experimentation with various types of accompaniment and choreographic techniques. An original water show is presented each spring and several demonstrations are given each year.

UNIVERSITY OF MARYLAND RECREATION SOCIETY: In the fall of 1959 the University of Maryland Recreation Society was formed by the undergraduate and graduate major and minor students of the College. The Society, an affiliate of various national recreation organizations, provides opportunities for university and community service, for rich practical experience, and for social experiences for those students having a mutual professional recreation interest.

MODERN DANCE GROUPS: Men and women interested in modern dance concentrate on dance techniques and individual and group compositions. Members present a spring concert and perform in demonstrations on and off campus. Advanced and beginning groups meet weekly. No experience necessary for beginning club.

GYMKANA TROUPE: The Gymkana Troupe includes men and women students from all colleges that wish to express themselves through the medium of gymnastics. These individuals coordinate their talents in order to produce an exhibitional performance that has been seen in many places including Bermuda, Iceland, Azores, Idaho, Montana, and the Eastern Seaboard of the United States. The organization has three principal objectives: (1) to provide healthful, co-recreational activities that provide fun for the students during their leisure hours; (2) to promote gymnastics in this locality; (3) to entertain our students and people in other communities.

This organization is co-sponsored by the Physical Education Department and the Student Government Association; and it welcomes any student, regardless of the amount of experience, to join and to have fun.

INTRAMURALS FOR MEN: The Intramural Department offers an extensive opportunity for all men to participate in a recreational program of either individual or team sports. A variety of activities are available to fill the student's leisure time and develop skills which may be carried over into later life. Also, many desirable attributes, such as fair play, leadership, team work and sportsmanship, are encouraged and developed by the student participating in the program.

Leagues and tournaments are conducted in the following sports: touch football, horseshoe pitching, tennis, cross country, track and field, basketball, table tennis, badminton, boxing, wrestling, bowling, volleyball, swimming, foul shooting and softball.

Management and officiating in intramural sports are conducted by students majoring in physical education under the supervision of the Director of Intramurals and under policies and regulations established by the Intramural Council.

WEIGHT LIFTING CLUB: The University of Maryland Weight Lifting Club is open to all students and faculty for exercise with the weights throughout the week. A returnable deposit fee of \$5.00 is required.

The University of Maryland Olympic Barbell Club is a more highly organized group of the original Club. They hold bi-monthly meetings; assist in leadership; participate in competition; earn an award of recognition.

Student Organizations

WOMEN'S RECREATION ASSOCIATION: *All women students of the University are members of the Women's Recreation Association, an affiliate of the Athletic and Recreational Federation of College Women. Under the leadership of its elected student officers and representatives and appointed sports managers, the WRA sponsors a full program of intramural, extramural, and interest group activities. These activities seek to develop new interests and skills for leisure-time enjoyment, provide opportunities for continuing both old and new interests, and provide a democratic atmosphere for educational leadership experiences. Included are free and tournament play in archery, badminton, basketball, bowling, fencing, field hockey, golf, softball, swimming, table tennis, tennis, and volleyball; social events; and co-recreational activities in bowling, badminton, volleyball. Intramural tournaments are organized through the dormitory, sorority, and "day dodger" groups of the University. Sports Days and Play Days with other colleges and universities enable the more skilled students to participate with others of similar abilities. Opportunities also are provided for officiating experiences and for the earning of official WNORC ratings in basketball, field hockey, swimming, and volleyball.*

Various special groups and clubs interested in recreation exist on campus outside the Women's Recreation Association program and offer rich opportunities for the development of other recreational interests. Some of these are the Terrapin Trail Club, Chess Club, Gymkana Troupe, Sailing Club, Ski Club, and musical and dramatic groups.

FACULTY

1961-1962

COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH

Administrative Officer

LESTER M. FRALEY, *Professor and Head, Department of Physical Education, and Dean of College of Physical Education, Recreation and Health*
A.B., Randolph-Macon College, 1928; M.A., Peabody College, 1937; PH.D., 1939.

Professors

DOROTHY F. DEACH, *Professor of Physical Education*
B.S., University of Illinois, 1931; M.S., 1932; PH.D., University of Michigan, 1951.

JAMES H. HUMPHREY, *Professor of Physical Education and Health*
A.B., Denison University, 1933; A.M., Western Reserve University, 1946; ED.D., Boston University, 1951.

WARREN R. JOHNSON, *Professor of Physical Education and Health*
B.A., University of Denver, 1942; M.A., 1947; ED.D., Boston University, 1950.

BENJAMIN H. MASSEY, *Professor of Physical Education*
A.B., Erskine College, 1938; M.S., University of Illinois, 1947; PH.D., 1950.

DOROTHY R. MOHR, *Professor of Physical Education*
B.S., University of Chicago, 1932; A.M., 1933; PH.D., University of Iowa, 1944.

Associate Professors

FRANK H. CRONIN, *Associate Professor of Physical Education; Head Golf Coach*
B.S., University of Maryland, 1946.

MARVIN H. EYLER, *Associate Professor of Physical Education*
A.B., Houghton College, 1942; M.S., University of Illinois, 1948; PH.D., 1956.

ELLEN E. HARVEY, *Associate Professor of Physical Education and Recreation*
B.S., New College, Columbia University, 1935; M.A., Teachers College, Columbia University, 1941; ED.D., University of Oregon, 1951.

BURRIS F. HUSMAN, *Associate Professor of Physical Education*
B.S., University of Illinois, 1941; M.S., 1948; ED.D., University of Maryland, 1954.

Faculty

JAMES KEHOE, *Associate Professor of Physical Education, Director of Intramurals, and Head Track Coach*

B.S., University of Maryland, 1940.

THERON A. TOMPKINS, *Associate Professor of Physical Education*

B.S., Eastern Michigan College of Education, 1926; M.A., University of Michigan, 1939.

GLADYS E. WADSWORTH, *Associate Professor and Head of the Department of Physical Therapy*

B.S., East Stroudsburg State Teacher's College, 1936; M.A., Columbia University, 1942; Certificate in Physical Therapy, Army Medical Department, 1943; PH.D., University of Maryland, 1955.

ALBERT A. WOODS, *Associate Professor of Physical Education*

B.S., University of Maryland, 1933; M.ED., 1949.

Assistant Professors

WILLIAM R. CAMPBELL, *Assistant Professor of Physical Education and Head Swimming Coach*

B.S., Springfield College, 1949; M.ED., 1953.

HAROLD W. FREEMAN, *Assistant Professor of Physical Education*

B.S., Pennsylvania State University, 1942; M.A., New York University, 1948.

MARTHA J. HAVERSTICK, *Assistant Professor of Physical Education*

B.S., Pennsylvania State College, 1943; M.S., University of Wisconsin, 1950.

LOUISE S. HOWARTH, *Assistant Professor of Physical Education*

A.B., Breanau College, 1928; M.ED., University of Minnesota, 1949.

JOSEPHINE W. HUBBELL, *Assistant Professor of Health Education*

B.S., William and Mary College, 1947; M.A., State University of Iowa, 1948; PH.D. New York University, 1956.

GEORGE P. KRAMER, *Assistant Professor of Physical Education*

B.S., University of Maryland, 1953; M.A., 1956.

WILLIAM E. KROUSE, *Assistant Professor of Physical Education and Head Wrestling Coach*

B.S., University of Maryland, 1942; M.ED., 1949.

JACK S. LOWDER, *Assistant Professor of Physical Education*

B.S., Wake Forest, 1950; M.E., University of North Carolina, 1955.

DOROTHY G. MADDEN, *Assistant Professor of Physical Education*

A.B., Middlebury College, 1936; M.A., Syracuse University, 1937.

DONALD H. STEEL, *Assistant Professor of Physical Education*

B.S., Trenton State Teachers College, 1955; M.A., University of Maryland, 1957.

DORIS TERRY, *Assistant Professor of Health Education*

B.S., Western Kentucky State College, 1949; M.S., University of Indiana, 1952;
M.P.H., University of North Carolina, 1958.

Instructors

M. JOSEPHINE GAINES, *Instructor of Health Education*

B.S., University of California, Los Angeles, 1949; M.A., New York University, 1952.

DOROTHY HAMBERG, *Instructor of Physical Education*

B.S.E., Arkansas State Teachers College, 1946; M.E., University of Arkansas, 1951.

MARY R. HARRINGTON, *Instructor of Physical Education*

B.S., College of William and Mary, 1949; M.A., New York University, 1951.

ETHEL KESLER, *Instructor of Physical Education*

B.S., Woman's College, University of North Carolina, 1949; M.S., Wellesley College, 1953.

ELEANOR BRYAN SANDERSON, *Instructor of Physical Education*

B.S., East Carolina College, 1955; M.ED., Woman's College, University of North Carolina, 1959.

CAROL H. SMITH, *Instructor of Physical Education*

B.S., Brooklyn College, 1954; M.S., University of Michigan, 1956.

WESLEY A. STICKNEY, *Instructor of Physical Education*

B.S., Seattle Pacific College, 1946; B.ED., 1952.

MARGARET TIFFT, *Instructor of Health Education*

B.S., Ohio State University, 1946; M.A., Columbia University, 1948.

Lecturers

W. W. COBEY, *Associate Professor, Director of Athletics*

A.B., University of Maryland, 1930.

H. A. MILLIKAN, *Associate Professor and Head Basketball Coach*

B.S., Oklahoma A. & M. College, 1943.

ALFRED J. WYRE, *Head Trainer*



DEPARTMENT
of
AIR SCIENCE

Catalog Series 1961-1962



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BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
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Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1960

JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day, Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26-1 Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 |

SPRING SEMESTER 1961

FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday, Holiday

MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 17 Wednesday—AFROTC Day
- 30 Tuesday—Memorial Day, Holiday

JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

SUMMER SESSION 1961

JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

JULY

- 4 Tuesday—Independence Day, Holiday
- 8 Saturday—Classes as usual

AUGUST

- 4 Friday—Summer Session Ends

SHORT COURSES 1961

JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

AUGUST

- 7-12 Monday to Saturday—4-H Club Week

SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

OFFICERS OF ADMINISTRATION

Principal Administrative Officers

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B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936; D. PHIL, 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

Emeriti

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women Emerita*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

Administrative Officers of the Schools and Colleges

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D.D.S., University of Maryland, 1922.

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B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;
ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University
of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agriculture Experiment Station and Head, Department
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,
University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,
1917.

VERLE S. LEWIS, *Dean of the School of Social Work*

A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western
Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;
PH.D., Pennsylvania State University, 1953.

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B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,
Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930;
Diplome de l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical
Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;
PH.D., (HON.), University of Louisville, 1946.

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B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of
Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania,
1949.

B. JAMES BORRESON, *Executive Dean for Student Life*
B.A., University of Minnesota, 1944.

DAVID L. BRIGHAM, *Director of Alumni Relations*
B.A., University of Maryland, 1938.

C. WILBUR CISSEL, *Director of Finance and Business*
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.

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B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; ED.D., Teachers College, Columbia, 1960.

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A.B., University of Maryland, 1930.

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B.S., University of Iowa, 1936; M.D., 1926.

GEARY F. EPPLEY, *Dean of Men*
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

HARRY D. FISHER, *Comptroller and Budget Officer*
B.S., University of Maryland, 1943.

GEORGE W. FOGG, *Director of Personnel*
B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. MCCARTNEY, *Director of University Relations*
B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*
B.S., University of Maryland, 1927; E.E., 1931.

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B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

ORVAL L. ULRY, *Director of the Summer Session*
B.S., Ohio State University, 1938; M.A., 1944; PH.D., 1953.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*
B.S., University of Maryland, 1933.

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B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.

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B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

CHARLES E. WHITE, *Chairman of the Lower Division*

B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

ADOLF E. ZUCKER, *Chairman of the Division of Humanities*

B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

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COMMITTEE ON THE FUTURE OF THE UNIVERSITY

Dr. Augustus J. Prah (Graduate School), *Chairman*

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Dr. M. H. Eyler (Physical Education), *Chairman*

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Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krah1 (Medicine), *Chairman*

THE DEPARTMENT OF AIR SCIENCE

THE DEPARTMENT OF AIR SCIENCE PROVIDES, IN THE TWO-YEAR PROGRAM termed Basic Air Science, a foundation for leadership and aerospace age citizenship. The second two years of instruction (together with four weeks of summer training at the end of the junior year) termed Advanced Air Science, builds upon the foundation in further developing upper classmen who are to become Air Force Officers.

Instruction in air and/or military science has been an important phase of instruction at the University of Maryland since 1856. In 1864 the General Assembly of Maryland accepted the provisions of the Act of Congress of 1862 whereby public lands were donated to the States providing colleges in which a course of military training was maintained. Until 1916 the institution was a military school. After World War I the military training was reorganized and given as specified in the Acts of Congress of 1916 and 1920, as amended, which are commonly known as the National Defense Acts. Under these laws the Reserve Officers Training Corps is organized to provide basic training and to offer advanced training leading to a commission in the United States Air Force Reserve.

All male students, unless specifically exempted, under University rules are required to engage in air science instruction for a period of two years. This is a prerequisite for graduation and must be taken by all eligible students in their first two years of attendance whether they intend to graduate or not. Students of the University, regardless of college in which registered, who successfully complete the Basic Program, may apply for admission to the Advanced Program.

The mission of the Advanced Reserve Officers Training Corps Program is to produce junior officers who have the qualities and attributes essential to their progressive and continued development as officers in the United States Air Force. The major mission is the training of candidates for commissioned service as pilots, observers, and technical and administrative officers in the United States Air Force Reserve. In addition, the Advanced Air Force Reserve Officers Training Corps Program will provide the principal source for procurement of junior officers for the Regular Air Force since many of the Reserve Officers apply for and are appointed as Regular Officers.

Air Force personnel approved by the President of the University, are detailed by the Department of the Air Force to administer these programs. Officers serve under appointment by the University as Professor or Assistant Professor of Air Science.

The Armory located east of the Administration Building has been declared by a Department of the Air Force inspector to be one of the finest buildings used for Air Science instruction in the country. It contains clothing storerooms, classrooms, individual offices for members of the teaching staff, offices for student

Exemption from Military Instruction

commanders of Cadet Corps activities, Cadet Lounge, audio-visual center, a ten point small bore gallery rifle range, and an inside Leadership Laboratory area 240 feet long by 120 feet wide. Leadership Laboratory field, parade ground and other outdoor educational facilities are nearby.

BASES FOR EXEMPTION FROM MILITARY INSTRUCTION

1. A student who has completed the basic program in other approved units of the United States Air Force, Army, or Naval ROTC will receive credit.

2. A student holding a commission in the Reserve Corps of the Army, Navy, Marine Corps, Coast Guard, or Air Force will receive credit.

3. A student who has served in the Army, Navy, Marine Corps, Coast Guard, or Air Force for a period of time long enough to be considered equivalent to the training received in the basic AFROTC program will receive credit. Short periods of service in any of the branches named above will be evaluated and allowed as credit toward completion of the course.

4. Graduate students are exempt.

5. A student classified as a "special student" who is registered for less than seven semester hours is exempt.

6. A student who is 24 years of age or older on or before the first day of scheduled classes for the semester will not be required to initiate or continue his basic AFROTC registration. He may start or continue AFROTC at his own option.

A student who for reason of age does not satisfy in whole or in part the basic AFROTC program will be required to pass an equivalent number of credits, presently within the pattern of the American Civilization Program, in addition to the basic American Civilization Program, and in addition to the curriculum requirements of his program of studies and/or college.

The intent of this plan is to give the over-age student an alternative to basic AFROTC, using five semester hours of academic credit as the measure of the alternative. It is expected that the courses used as options will advance the same citizenship education purpose as is associated with basic AFROTC.

Any course used as an alternative to AFROTC will require the approval of the dean of the school or college from which the student is graduating and it must be taken at the University of Maryland. Preference will be given to advanced courses in history, government and politics, and English. If a proposed course selection falls outside the pattern of the American Civilization Program prior approval must be given by the Vice President for Academic Affairs.

7. A student who is physically handicapped may exercise the same option as an over-age student. The physical handicap must be verified by the Direc-

tor of Student Health. It is expected that many physically handicapped persons will prefer basic AFROTC. They are acceptable in basic AFROTC as they were under former regulations.

8. A student who transfers to the University with advanced standing equivalent to junior status or higher may pursue basic AFROTC semester by semester until graduation (or for four semesters) as permitted in the past, or he may exercise the option outlined for over-age students. The number of additional semester hours of academic credit for which the transfer student will be held is five if on campus for four semesters and three credits for any period less than four semesters.

9. A verified conscientious objector may exercise the five-semester-hour-equivalent option. The criterion for determining this status shall be the same as that used in administering the Universal Military Training and Service Act. Minors must obtain the signature of their parents to exercise this alternative. If the conscientious objector falls into any other category of alternatives (over-age, physically handicapped, transfer at junior level) he may give precedence to the other category.

10. A foreign student, other than one with an *immigrant* visa, is exempt. He may choose the alternative described previously if he falls in any of the categories to which the alternative applies.

Basic, Advanced and Chaplain Trainee Programs

The course of instruction leading to a commission as a Second Lieutenant is organized into a two-year Basic Program which all male students except those exempted must take, and an elective two-year Advanced Program offered to students selected from among eligible applicants.

BASIC PROGRAM

In the two years of the Basic Air Science Program, instruction will consist of one (1) hour a week of classroom instruction or Leadership Laboratory during the first and fourth semesters and three (3) hours a week, two (2) hours of classroom instruction and one (1) hour of Leadership Laboratory during the second and third semesters. Additionally, in the first and fourth semesters, courses will be designated from the student's regular college program to satisfy the Basic Air Science curriculum.

The necessary training equipment and technical material, is on loan to the University by the Department of the Air Force.

ADVANCED COURSE

The primary object of the Advanced Air Science Program is to provide instruction and systematic training to selected eligible students to the end that they may qualify as United States Air Force Reserve Officers. It is

Basic, Advanced and Chaplain Trainee Programs

intended to attain this objective during the time the students are pursuing their academic studies at the University. Successful completion of the Advanced Air Science Program and a baccalaureate degree will lead to a Commission in the United States Air Force Reserve.

Male students, prior to enrollment in the Advanced Program, must have satisfactorily completed the Basic Program or have received credit for it by virtue of their military service. The student must have indicated in writing his desire to undertake the course. Selection of students in the Advanced Program will be made by the President of the University and the Professor of Air Science, as provided in section 47c, National Defense Act. No applicant will be admitted to the Advanced Program who is less than fourteen or more than twenty-five years of age at the time of admission or who is not able to pass physical standards as set forth in Air Force Manual 160-1. Applicants are also required to satisfactorily complete the Air Force Officer Qualifying Test.

The Junior year of the Advanced Air Science Program will consist of five (5) hours a week, four (4) hours of classroom instruction and one (1) hour of Leadership Laboratory a week. The Senior year of the Advanced Air Science Program will consist of two (2) hours a week, one (1) hour of classroom instruction and one (1) hour of Leadership Laboratory a week. Additionally, Advanced Cadets will take G. & P. 101 during the seventh semester and Geography 190 during the last semester. Special formations for Advanced Cadets may be held as directed by the Professor of Air Science. Special formations for all cadets may be held as approved by the Professor of Air Science and President of the University.

Air Science Instruction For Women

Women may take Air Science instruction as an elective subject. They will participate fully in the classroom instruction and in Leadership Laboratory. The Air Force WAF uniform may be worn, but must be purchased by the individual student. Permission to take Air Science must be obtained from the Dean of Women as well as the dean of the student's college.

General

UNIFORMS

All cadets must appear in proper uniform at all Leadership Laboratory formations and at such other times as the Professor of Air Science may designate. Uniforms for cadets in the Basic Program are furnished by the University of Maryland. They are purchased from an allowance provided by the United States Air Force. The uniforms are the regulation uniforms of the United States Air Force, with certain distinguishing features. Such uniforms must be kept in good condition by the cadets. The uniforms will

not be worn in part, nor used while the wearer is engaged in athletic activity. The uniforms issued to Basic Cadets will be returned to the University of Maryland Property Custodian in the Department of Air Science at the end of the year, or before, if a student severs his connection with the Department.

The Advanced Cadets will wear an officer-type uniform, purchased on a Federal Government Allowance.

COMMUTATION

All members of the Advanced Program will receive a monetary allowance in lieu of subsistence, equivalent to the current value of the garrison ration, to be paid quarterly during the periods of enrollment in the Advanced Program less the period of the summer camp of four weeks. During this camp the student will receive the pay of the seventh enlisted grade as well as travel pay to and from camp. The total period of commutation will not exceed 609 days for any cadet. This allowance may be paid in addition to benefits authorized by the GI Bill of Rights.

ACADEMIC INSTRUCTION

Air Science instruction offered by the Department of Air Science is on a par with other University work, and the requirements of this Department as to proficiency are the same as those of other departments. Academic elective credits are given in all colleges for the Advanced Air Science Course.

Students who have received ROTC training at any other educational institution under the direction of officers detailed as Professor of Military Science and Tactics, Professor of Air Science, and Professor of Naval Science, may receive such credit as applicable Air Force Regulations allow.

AIR FORCE RESERVE OFFICER TRAINING CORPS BAND

The AFROTC Band is composed of Basic Cadets who are members of the University of Maryland Band. Both the AFROTC Band and the University of Maryland Band function under the Department of Music. The Cadet Band practices during leadership laboratory periods and plays for cadet formations and functions. Basic AFROTC uniforms are worn by band members while participating in the Cadet Band.

UNIVERSITY AND AIR FORCE RESERVE OFFICER

TRAINING CORPS RIFLE TEAMS

The University's rifle teams are under the supervision of the Department of Air Science. Rifle shooting at the University of Maryland is rated as a major sport activity. The rifle teams representing this institution have achieved

General Information, Honors and Awards

a high national standing for they have consistently placed at the top brackets in the National Intercollegiate Rifle Matches. Rifles and ammunition are furnished by the State and Federal Governments. The rifle range in the Armory used by the teams has been pronounced by officials of the National Rifle Association to be among the finest in the country.

Both a Varsity Team and a Freshman Team are placed in intercollegiate competition, with members of the latter team being awarded class numerals. Cadets on the AFROTC Rifle team receive badges, ribbons and medals for their performance on the team.

AFROTC FLIGHT INSTRUCTION PROGRAM

Under the Flight Instruction Program, advanced AFROTC cadets who are scheduled to become pilots in the United States Air Force are given the opportunity to obtain training leading to a Private Pilots license in a light airplane. The cadet is given 36½ hours of flight instruction by a civilian flying school under contract to the United States Air Force. All costs are borne by the United States Air Force. In addition, the cadet receives 35 hours of ground instruction by members of the Department of Air Science. Additional hours of instruction are given as required by a Federal Aviation Agency representative. The purpose of the Flight Instruction Program is to (1) increase interest in a flying career in the United States Air Force and (2) to determine, prior to entry on active duty, the capabilities of pilot trainees.

Honors and Awards presented to Air Science Students

AIR FORCE ASSOCIATION AWARD.—The Air Force Association Silver Medal is presented to an outstanding advanced course cadet who has completed an Air Force Summer Training unit with a rating of 4.00 or better, who has a grade average of at least "B" in Air Force ROTC subject matter (to include Leadership Laboratory) during the present academic year and possesses a positive attitude toward AFROTC work and service in the Air Force; high standards of personal appearance, a high degree of initiative, judgment and self confidence, courteousness with respect to promptness, obedience and respect for military customs as well as high promotion potential as evidenced by capacity for responsibility, high productivity, adaptability to chance, maintenance of high personal and ethical standards and strong positive convictions.

ALUMNI CUP.—The Alumni Association offers each year a cup to the Leader of the best drilled Flight in competitive drill.

AMERICAN LEGION POST NO. 217 AWARD.—This award is presented to the senior advanced cadet who displays outstanding leadership.

AMERICAN LEGION GOLD MEDAL.—The gold medal is awarded to the senior advanced cadet for academic achievement in leadership.

ARMED FORCES COMMUNICATIONS MEDAL—This medal is awarded to the senior advanced cadet in recognition of outstanding achievement in the field of electronics.

ARNOLD AIR SOCIETY PLAQUE—This plaque is awarded to the second year advanced cadet who has done the most to advance the AFROTC interests and activities for the Arnold Air Society.

THE CONVAIR AIR FORCE ROTC CADET AWARD—Presented annually to an outstanding Sophomore AFROTC cadet who has been selected for the advanced course, and who has demonstrated outstanding qualities contributing to Air Force leadership such as positive attitude toward scholastic work and service in the Air Force, high standards of personal appearance, exemplary personal attributes of initiative, judgment, self confidence, demonstrated courtesy with respect to promptness, obedience and respect for military customs, as well as high promotion potential as evidenced by capacity for responsibility, high productivity, adaptability to change, aptness and maintenance of highest personal and ethical standards.

CHICAGO TRIBUNE AFROTC AWARDS—Two Gold Medals are presented annually to two sophomores, and two Silver Medals are presented annually to two freshmen who have expressed a sustained desire for an Air Force Commission, who are in the top ten percent of their leadership classes, who are in the top ten percent of their classes in other AFROTC subjects and who possess strong, moral character befitting a potential Air Force Officer.

DISABLED AMERICAN VETERANS' GOLD CUP—This cup is awarded to the senior advanced cadet who has displayed outstanding leadership, scholarship, and citizenship.

DISTINGUISHED AFROTC CADET AWARDS—These awards are presented to senior cadets who have been outstanding in AFROTC and who are outstanding in their academic major fields. Distinguished AFROTC cadets are eligible to apply for regular Air Force commission.

FRESHMAN DIVISION SILVER CUP—Awarded by the Freshman Division, Department of Air Science to a freshman cadet for outstanding leadership, military bearing and aptitude and desire for an Air Force career.

GOVERNOR'S CUP—This cup is offered each year by His Excellency, the Governor of Maryland, to the best drilled squadron.

HAMILL MEMORIAL PLAQUE—This plaque, offered by the local chapter of Theta Chi Fraternity, is presented to the sophomore cadet excelling in leadership and scholarship.

DISTINGUISHED AFROTC GRADUATE—Presented to distinguished cadets of the AFROTC who continue to display outstanding academic and leadership qualities.

Honors and Awards

AFROTC ANGEL FLIGHT AWARD—Presented to the most outstanding member of the Angel Flight.

CHARLES H. DICKINSON MEMORIAL, PLAQUE—Offered by the Veterans Club, University of Maryland, to the junior cadet who has shown leadership ability, outstanding individual characteristics of military bearing.

VANDENBERG GUARD AWARD—Presented to the member of the Vandenberg Guard displaying most leadership ability.

GLENN L. MARTIN AERONAUTICAL ENGINEERING AWARD—This award is presented for academic excellence in the field of aeronautical engineering to a senior advanced cadet who has applied for flight training.

MARYLAND STATE SOCIETY DAUGHTERS OF FOUNDERS AND PATRIOTS OF AMERICA AWARD—This award is presented to the freshman cadet attaining the highest over-all academic grades.

MILITARY ORDER OF WORLD WARS AWARD—Presented by the Military Order of World Wars to the outstanding graduate of the Cadet Leadership Academy of the University of Maryland Cadet Corps.

THE NATIONAL DEFENSE TRANSPORTATION ASSOCIATION AWARD—Presented annually to a senior AFROTC cadet who potentially qualifies for a baccalaureate degree in Business Administration, including 25 semester hours in courses related to air and/or surface transportation, who is potentially qualified for award of AFSC 6021, Air Transportation Officer or AFSC 6031 Surface Transportation Officer, and who has demonstrated outstanding leadership qualities, academic achievement, aptitude for Air Force service, and meritorious achievement and noteworthy service in the promotion of preparedness for national defense of the United States.

PERSHING RIFLE REGIMENTAL MEDAL—Presented to the member of Pershing Rifles who shows outstanding service to the company.

PERSHING RIFLE SILVER AND BRONZE MEDALS—The Pershing Rifle Company presents these medals to the most outstanding first and second year basic cadets who are members of the Pershing Rifles.

PERSHING RIFLE AWARD—Medal presented by Pershing Rifle Company to the best drilled cadet of the corps who is not a member of Pershing Rifles.

PERSHING RIFLE GOLD MEDAL—This medal is awarded to the outstanding member of the Pershing Rifles.

REILEY MEMORIAL PLAQUE—Presented by the family of George M. Reiley, Jr., to the member of the Flight Instruction Program showing the most aptitude for flying.

RESERVE OFFICERS ASSOCIATION SENIOR AWARD—Presented to the outstanding senior cadet of the Corps of Cadets.

RESERVE OFFICERS ASSOCIATION MEDALS—Three medals, gold, silver, and bronze, are presented by this association to three cadets demonstrating outstanding academic achievement in the AFROTC and in other studies.

RESERVE OFFICERS ASSOCIATION RIBBONS—The Air Force Reserve Officers Association presents ribbons to the 40 outstanding freshman cadets, the 30 outstanding sophomore cadets, and to 10 outstanding juniors.

SCABBARD AND BLADE COBLENTZ MEMORIAL CUP—This cup awarded to the Commander of the winning squadron in drill competition.

SOCIETY OF AMERICAN MILITARY ENGINEERS ROTC AWARD OF MERIT—Presented annually, on a AFROTC wide competitive basis to outstanding Junior and the outstanding Senior AFROTC cadet majoring in engineering, who are in the upper fourth of both the Air Science and his engineering class, and has been recommended as the outstanding Engineering Student of the Year of his group in the AFROTC program by both his Professor of Air Science and the Dean of the College of Engineering.

SONS OF THE AMERICAN REVOLUTION AWARD—A Bronze Medal presented at the prerogative of the local chapter, Sons of American Revolution to an AFROTC cadet completing his first year of training who has shown during his Freshman year a firm belief in, knowledge of, and a positive attitude toward the Constitution of the United States of America, who has maintained a grade average of A in his AFROTC subjects, and has expressed and demonstrated an interest in both the Air Force ROTC advanced program, and in duty as an Air Force Officer.

SUN NEWSPAPER AWARD—This award is presented to a basic cadet in recognition of being the best drilled basic cadet in competitive drill.

SECRETARY OF THE AIR FORCE AFROTC RIFLE MATCH AWARDS—AFROTC annual makes the following awards: A perpetual trophy to the highest scoring detachment team, a permanent trophy to the highest scoring detachment team and medals to each of five members of the first, second and third teams in the competition.

AFROTC AREA CHAMPIONSHIP RIFLE TEAM AWARD—Presented annually to the highest scoring AFROTC team in each Air Force ROTC Area, entered in the Secretary of the Air Force Rifle Match, excluding the winning team.

THE WILLIAM RANDOLPH HEARST TROPHY—Presented by the Baltimore News-Post for the Air Force ROTC Championship in the William Randolph Hearst National ROTC Rifle Competition.

COURSE OFFERINGS

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of hours credit is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program.

A. S. 1. *First Year Basic Air Science.* (½)

First and second semesters. One one-hour period per week in Leadership Laboratory.* Leadership practices. Introduces the student to a progressive leadership program which offers opportunity to develop and test areas of leadership knowledge and skill in a supervised environment. Provides the student with the understanding of the purpose of and his responsibilities for military courtesy and self-discipline within a framework of formal organization, of the demands made on leaders for assumption of responsibilities, of the value of proper personal appearance, and of the unifying force of group participation.

A. S. 2. *First Year Basic Air Science.* (2)

First and second semesters. Two one-hour periods of class instruction and one one-hour period of Leadership Laboratory per week. Foundations of aerospace power and leadership practices. An introduction to the elements of aerospace power including a study of the military instruments of national security, an appreciation of the elements and potentials of aerospace power including air research, development, procurement and the aircraft industry, and an initial survey of the evolution of aerial warfare. Continues the study of leadership principles and practices through laboratory applications.

A. S. 3. *Second Year Basic Air Science.* (2)

First and second semesters. Two one-hour periods of class instruction and one one-hour period of Leadership Laboratory per week. Continues the survey of the elements of aerospace power and leadership practices. Includes a more advanced study of the elements of aerial warfare and leads into a consideration of the employment of air forces. Space operations are reviewed with emphasis on the space environment, space vehicles and ground space facilities, human and technical factors, current programs, future possibilities and military implications. Includes a continuation of leadership development in Leadership Laboratory.

A. S. 4. *Second Year Basic Air Science.* (½)

First and second semesters. One one-hour period of Leadership Laboratory per week.* Leadership Practices. A continuation of the basic leadership development program. Offers the student an opportunity to increase proficiency in the role of leader-instructor.

*In addition, the Department of Air Science will designate a course from the student's regular college program carrying a minimum of two credit hours as satisfying the semester requirements of the Basic Air Science curriculum.

A. S. 101, 102. *First Year Advanced Air Science.* (4, 4)

Four one-hour periods of class instruction; one one-hour period of Leadership Laboratory per week. Introduces advanced Air Force ROTC cadets to the principles of leadership and functions of command as they may be applied to current and future problems in the United States Air Force. Provides an understanding of behavioral and communication skills and the scientific method of problem solving as they may be employed in Air Force command and staff problems. Introduces the military justice system, military correspondence, and instructional procedures and techniques as they are used in the United States Air Force today. Includes leadership laboratory opportunities to apply socio-psychological principles of leadership for the development of the cadet's potential in realistic problem situations.

A. S. 103, 104. *Second Year Advanced Air Science.* (1, 1)

One one-hour period of class instruction and one one-hour period of Leadership Laboratory each week. Leadership and preparation for commissioned service. Aims at understanding the basic concepts of meteorology and navigation as they relate to Air Force operations and continues the study of modern aerial doctrine, moral responsibilities of the officer and preparation for commissioned service. Includes: summer camp critique, meteorology, navigation and the Air Force Officer. (In addition to A. S. 103, 104; all second year Advanced Air Science students are required to satisfactorily complete Government and Politics 101 during the first semester and Geography 190 during the second semester of each academic year.

FACULTY

1961-1962

DEPARTMENT OF AIR SCIENCE

Administrative Officer

THEODORE R. AYLESWORTH, *Professor of Air Science and Head of Department of Air Science*

Colonel, United States Air Force

B.S., Mansfield State Teachers College, Pennsylvania, 1936; M.S., University of Pennsylvania, 1949.

Associate Professor

LOUIS W. CRACKEN, *Associate Professor of Air Science, Maryland State College Major, United States Air Force*

A.B., University of Denver, 1954; M.A., George Washington University, 1956.

Assistant Professors

HENRY A. WALKER, *Assistant Professor of Air Science*

Lt. Colonel, United States Air Force

B.S., University of Massachusetts, 1934; ED.M., Harvard University, 1939.

MICHAEL J. ORLANDO, *Assistant Professor of Air Science*

Lt. Colonel, United States Air Force

B.S., New York State University, 1946; M.A., Columbia University, 1949.

DAVID R. BROWN, *Assistant Professor of Air Science*

Major, United States Air Force

B.S., University of Maryland, 1956.

JAMES F. CASEY, *Assistant Professor of Air Science and Commandant of Cadets Major, United States Air Force*

B.S., University of Colorado, 1951.

SIDNEY R. DAVIS, *Assistant Professor of Air Science*

Major, United States Air Force

B.S., University of Maryland, 1958.

RICHARD L. GRIBLING, *Assistant Professor of Air Science*

Major, United States Air Force

B.S., University of California, 1948.

DAVID C. MCDANIEL, *Assistant Professor of Air Science*

Major, United States Air Force

B.S., Ohio State University, 1957.

DAVID H. E. OFFER, *Assistant Professor of Air Science*
Major, United States Air Force
 B.S., University of Maryland, 1959.

JAMES J. CANTLON, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., University of Notre Dame, 1950.

DONALD W. CORRICK, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., University of Maryland, 1953.

ROBERT A. DELMAR, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., University of Maryland, 1953.

CECIL J. DOTSON, *Assistant Professor of Air Science*
Captain, United States Air Force
 LL.B., University of Maryland, 1950.

JOHN C. DUNN, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., Boston University, 1949.

WILLIAM R. GRAHAM, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., University of Maryland, 1952.

IRVIN L. KLINGENBERG, JR., *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., University of Maryland, 1952.

ALLEN D. MAXWELL, *Assistant Professor of Air Science*
Captain, United States Air Force
 A.B., American University, 1959.

JAMES C. PFAUTZ, *Assistant Professor of Air Science, Maryland State College*
Captain, United States Air Force
 B.S., United States Military Academy, 1953.

MAURICE C. SLUSS, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.S., United States Naval Academy, 1953.

THOMAS F. THAMANN, *Assistant Professor of Air Science*
Captain, United States Air Force
 B.A., University of Cincinnati, 1951.

Instructors

ROBERT C. BROWN, *Instructor, Department of Air Science*
M/Sgt., United States Air Force

Faculty

GEORGE M. MARTIN, *Instructor, Department of Air Science*
M/Sgt., United States Air Force

GEORGE W. BURKE, *Instructor, Department of Air Science*
T/Sgt., United States Air Force

KENNETH F. MULLEDY, *Instructor, Department of Air Science*
T/Sgt., United States Air Force

WILLIAM G. RICHARDSON, *Instructor, Department of Air Science*
T/Sgt., United States Air Force

WILLIAM A. HOLLAND, *Instructor, Department of Air Science*
S/Sgt., United States Air Force

HAL A. LACY, *Instructor, Department of Air Science*
S/Sgt., United States Air Force

WILLIAM F. MAYNE, *Instructor, Department of Air Science*
S/Sgt., United States Air Force

FREDERICK J. SMITH, *Instructor, Department of Air Science, Maryland State*
College, S/Sgt., United States Air Force

ROBERT F. VAETH, *Instructor, Department of Air Science*
S/Sgt., United States Air Force

GERALD F. FIELDS, *Instructor, Department of Air Science*
A/1c, United States Air Force

RUSSELL M. MORAN, *Instructor, Department of Air Science, Maryland State*
College, A/1c, United States Air Force

UNIVERSITY COLLEGE

Catalog Series 1961-1963



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VOLUME 16

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UNIVERSITY CALENDAR

FALL SEMESTER 1961

SEPTEMBER

- 18-22 Monday to Friday—Fall Semester Registration
- 25 Monday—Instruction Begins

NOVEMBER

- 22 Wednesday—Thanksgiving Recess Begins After Last Class
- 27 Monday—Thanksgiving Recess Ends 8 a.m.

DECEMBER

- 20 Wednesday—Christmas Recess Begins After Last Class

JANUARY 1962

- 3 Wednesday—Christmas Recess Ends 8 a.m.
- 24 Wednesday—Pre-Examination Study Day
- 25-31 Thursday to Wednesday, inclusive—Fall Semester Examinations

SPRING SEMESTER 1962

FEBRUARY

- 5-9 Monday to Friday—Spring Semester Registration
- 12 Monday—Instruction Begins
- 22 Thursday—Washington's Birthday, Holiday

MARCH

- 25 Sunday—Maryland Day

APRIL

- 19 Thursday—Easter Recess Begins After Last Class
- 24 Tuesday—Easter Recess Ends 8 a.m.

MAY

- 16 Wednesday—AFROTC Day
- 30 Wednesday—Memorial Day, Holiday

JUNE

- 1 Friday—Pre-Examination Study Day
- 2-8 Saturday to Friday, inclusive—Spring Semester Examinations
- 3 Sunday—Baccalaureate Exercises
- 9 Saturday—Commencement Exercises

SUMMER SESSION 1962

JUNE 1962

- 25 Monday—Summer Session Registration
- 26 Tuesday—Summer Session Begins
- 30 Saturday—Classes as Usual

JULY

- 4 Wednesday—Independence Day, Holiday

AUGUST

- 3 Friday—Summer Session Ends

SHORT COURSES 1962

JUNE 1962

- 18-23 Monday to Saturday—Rural Women's Short Course

AUGUST

- 6-11 Monday to Saturday—4-H Club Week

SEPTEMBER

- 4-7 Tuesday to Friday—Firemen's Short Course

UNIVERSITY CALENDAR

FALL SEMESTER 1962

SEPTEMBER

- 17-21 Monday-Friday—Registration
- 24 Monday—Instruction begins

NOVEMBER

- 21 Wednesday, after last class—Thanksgiving recess begins
- 26 Monday, 8:00 a.m.—Thanksgiving recess ends

DECEMBER

- 21 Friday, after last class—Christmas recess begins

JANUARY 1963

- 3 Thursday, 8:00 a.m.—Christmas recess ends
- 23 Wednesday—Pre-Examination Study Day
- 24-30 Thursday-Wednesday—Fall Semester Examinations

SPRING SEMESTER 1963

FEBRUARY

- 4-8 Monday-Friday—Registration
- 11 Monday—Instruction begins
- 22 Friday—Washington's Birthday Holiday

MARCH

- 25 Monday—Maryland Day (not a holiday)

APRIL

- 11 Thursday, after last class—Easter recess begins
- 16 Tuesday, 8:00 a.m.—Easter recess ends

MAY

- 15 Wednesday—AFROTC Day
- 30 Thursday—Memorial Day, holiday
- 31 Friday—Pre-Examination Study Day

JUNE

- 1-7 Saturday-Friday—Spring Semester Examinations
- 2 Sunday—Baccalaureate Exercises
- 8 Saturday—Commencement Exercises

SUMMER SESSION, 1963

JUNE

- 24 Monday—Registration, Summer Session
- 25 Tuesday—Instruction begins
- 29 Saturday—Classes as usual

JULY

- 4 Thursday—Independence Day, holiday

AUGUST

- 2 Friday—Summer Session ends

SHORT COURSES

JUNE

- 17-22 Monday-Saturday—Rural Women's Short Course

AUGUST

- 5-10 Monday-Saturday—4-H Club Week

SEPTEMBER

- 3-6 Tuesday-Friday—Firemen's Short Course

BOARD OF REGENTS

and

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> McCormick and Company, 414 Light Street, Baltimore 2	1966
EDWARD F. HOLTER <i>Vice-Chairman</i> Farmers Home Administration U.S.D.A., 103 South Gay Street, Baltimore 2, Maryland	1968
B. HERBERT BROWN <i>Secretary</i> The Baltimore Institute, 10 West Chase Street, Baltimore 1	1967
HARRY H. NUTTLE <i>Treasurer</i> Denton	1966
LOUIS L. KAPLAN <i>Assistant Secretary</i> 5800 Park Heights Avenue, Baltimore 15	1964
C. E. TUTTLE <i>Assistant Treasurer</i> 907 Latrobe Building, Charles and Read Streets, Baltimore 2	1962
RICHARD W. CASE Commercial Credit Building, Baltimore	1970
THOMAS W. PANGBORN The Pangborn Corporation, Pangborn Blvd., Hagerstown	1965
THOMAS B. SYMONS Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	1963
WILLIAM C. WALSH Liberty Trust Building, Cumberland	1968
MRS. JOHN L. WHITEHURST 4101 Greenway, Baltimore 18	1967

Members of the Board are appointed by the Governor of the State for terms of seven years each, beginning the first Monday in June. Members may serve only two consecutive terms.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

OFFICERS OF ADMINISTRATION

Principal Administrative Officers

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;
D. PHIL, 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; PH.D.,
1942.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and
Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

Emeriti

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson
College, 1938; D.SC., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women Emerita*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration,
Emeritus*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

Administrative Officers of the Schools and Colleges

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado,
1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D.,
Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse Uni-
versity, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland,
1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agriculture Experiment Station and Head, Department of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland, 1917.

VERL S. LEWIS, *Dean of the School of Social Work*

A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

JAMES H. REID, *Acting Dean of the College of Business and Public Administration*

B.S., University of Iowa, 1923; M.A., American University, 1933.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930; Diplome de l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; PH.D., (HON.), University of Louisville, 1946.

General Administrative Officers

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

- B. JAMES BORRESON, *Executive Dean for Student Life*
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- HELEN E. CLARKE, *Dean of Women*
B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; ED.D., Teachers College, Columbia, 1960.
- WILLIAM W. COBEY, *Director of Athletics*
A.B., University of Maryland, 1930.
- LESTER M. DYKE, *Director of Student Health Service*
B.S., University of Iowa, 1936; M.D., 1926.
- GEARY F. EPPLEY, *Dean of Men*
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- HARRY D. FISHER, *Comptroller and Budget Officer*
B.S., University of Maryland, 1943.
- GEORGE W. FOGG, *Director of Personnel*
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MC CARTNEY, *Director of University Relations*
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- ORVAL L. ULRY, *Director of Summer Session*
B.S., Ohio State University, 1938; M.A., 1944; PH.D., 1953.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*
B.S., University of Maryland, 1933.

Division Chairmen

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- CHARLES E. WHITE, *Chairman of the Lower Division*
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

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Dr. Augustus J. Pahl (Graduate School), *Chairman*

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ADJUNCT COMMITTEES OF THE GENERAL COMMITTEE ON STUDENT LIFE AND WELFARE

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STUDENT PUBLICATIONS AND COMMUNICATIONS

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Dr. M. H. Eyler (Physical Education), *Chairman*

STUDENT DISCIPLINE

Dr. A. J. Fisher (Business and Public Administration), *Chairman*

BALTIMORE CAMPUS, STUDENT AFFAIRS

Dr. Vernon E. Krabl (Medicine), *Chairman*



UNIVERSITY COLLEGE

1961-1963

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DIVISION OF MILITARY STUDIES

College Park, Maryland

T. DODSON STAMPS, Brig. Gen., U.S. Army (Ret.), B.A., B.S.,
Assistant Dean for Military Studies

HENRY A. WALKER, Col., U.S.A.F. (Ret.), M.Ed., *Assistant to the
Dean for Military Studies*

DIVISION OF INSTITUTES

College Park, Maryland

RICHARD H. STOTTLER, M.A., *Assistant Dean and Director*

DONALD A. DEPPE, M.A., *Assistant Director of Conferences and Institutes*

WILLIAM STAMNAS, M.Ed., *Conference Coordinator*

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EUROPEAN DIVISION

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DON E. TOTTEN, Ph.D., *Assistant Director*

PHILIP D. WHEATON, Ph.D., *Assistant Director*

JAMES L. COLWELL, Ph.D., *Assistant Director*

JOHN PARR, Ph.D., *Resident Dean, Munich Branch*

JOHN HUNT, M.A., *Assistant Director, United Kingdom*

ROSE BEYER, Dr. Sc., *Mathematics Supervisor*

KLAUS BURKHARDT, B.S., *Language Supervisor*

GUENTER SCHALICH, *Staatsexamen, Assistant Language Supervisor*

ANN R. REED, B.A., *Assistant Director of Admissions*

JOHANNA MARTIN, B.A., *Evaluator, Admissions*

MARGERY O. FRY, B.S., *Assistant Registrar*

GEORGE E. WILLIAMS, B.S., *Comptroller*

JAN HARTMAN, M.A., *Manager, Book Department*

THERESA HYDE, *Administrative Assistant*

FAR EAST DIVISION

Tokyo, Japan

LESLIE R. BUNDGAARD, Ph.D., *Director*

JOSEPH E. DELLEN, Ph.D., *Associate Director*

MICHAEL E. RUDDY, M.A., *Assistant Director*

WALTER V. HOHIENSTEIN, Ph.D., *Assistant Director, Korea*

HERBERT L. NELSON, B.S., *Assistant Director and Comptroller*

GENE H. BUNDGAARD, B.Ed., *Assistant Director of Admissions and Registrar*

SECTION I

THE COLLEGE

University College is one of the eight colleges and seven professional schools which make up the University of Maryland. It offers degree and non-degree educational programs in the late afternoon and evening for mature adults, both on-campus and off-campus, throughout the State of Maryland, the District of Columbia, and 24 foreign countries on four continents. The Overseas Program is offered for U. S. military and civilian personnel and their dependents in cooperation with the Department of Defense. The College also offers conferences and institutes for periods varying from one day to several weeks. Administratively and academically the College is an integral part of the University of Maryland. University College is, however, fiscally self-sustaining.

Other colleges and schools of the University also offer late afternoon and evening programs, but these are administered separately from University College. Persons interested in such programs should direct their inquiries to the college or school involved. For example, the College of Education offers teacher training and graduate education courses on the College Park campus in the evening; the extension service of the College of Agriculture has a state-wide program; the School of Law offers evening work in Baltimore. Other departments of the University occasionally offer late afternoon and evening courses, primarily for their graduate students.

HISTORY AND ORGANIZATION OF THE COLLEGE

Evening courses have been offered by various departments of the University of Maryland since the 1920's. In 1947, the College of Special and Continuation Studies was established to administer the off-campus evening courses. In 1959, its name was changed to University College. In addition to the main office at College Park, there are six major administrative divisions of the College; the Conferences and Institutes Division, the On-Campus Evening Division, the Baltimore Division, the European Division, the Atlantic Division, and the Far East Division.

The home office of University College is located on the College Park campus. It has jurisdiction over all of its component divisions. In addition, except for courses offered through the Baltimore Division, the home office administers the off-campus programs of the University for military personnel in the State of Maryland and the District of Columbia, off-campus courses for business and industry, education and allied courses for in-service teachers, and programs for various governmental agencies.

The Conferences and Institutes Division, established in 1952, has its headquarters in the College Park offices of University College. It offers conferences, institutes, short courses, and selective adult education programs on the College Park and Baltimore Campuses, and throughout the State of Maryland at the

History and Organization of the College

request of organized groups. These offerings are of a non-degree nature; however, under certain circumstances it may be possible to arrange special programs adaptable to degree requirements. For more detailed information see Section II.

The On-Campus Evening Division was established in 1959 to serve adults in the College Park vicinity who are unable to attend daytime classes. It is administered by the Evening Division Coordinator who is located in the College Park offices of University College. This Division offers a wide variety of courses leading to the Bachelor of Arts degree in General Studies. Courses in the Evening Division are conducted with the cooperation of the regular academic department heads.

The Baltimore Division originated with a program of courses offered in Baltimore by the University, primarily for teachers, in the mid nineteen-twenties. With the establishment of what is now University College in 1947, the Baltimore program was incorporated into the College. The Baltimore Division is administered by a director and staff with offices on the Baltimore campus at Lombard and Greene Streets. A broad program of credit courses is offered on the undergraduate and graduate levels. Degree opportunities are offered for students in General Studies, Military Studies, Education, and for registered nurses in Nursing. In addition, the Baltimore Division administers approximately fifteen smaller centers where programs are offered for teachers, industrial personnel, military personnel, state and municipal employees, and prison inmates. The Baltimore Division publishes a printed schedule of courses each semester, which is available upon request.

The European Division, established in 1949, was the first to offer courses overseas. It is administered by a director and staff located in Heidelberg, Germany. An assistant director for the United Kingdom has offices in London. Courses administered by the European Division are available in thirteen foreign countries in Europe, Africa, and the Near East. Also administered by the European Division is the Munich Branch, a two-year college daytime program established to meet the educational needs of college-age dependents of Armed Forces and Government personnel.

The Atlantic Division, which offers programs similar to those in the European Division, was established in 1951. It is administered by a director with headquarters in the College Park offices at University College. Administered by the Atlantic Division are centers in the Azores, Bermuda, Greenland, Iceland, Labrador, and Newfoundland.

The Far East Division was established in 1956. A director and staff have headquarters in Tokyo. An assistant director, located in Seoul, is in charge of the program in Korea. The Far East Division conducts courses in Japan and Korea and on Guam, Okinawa and Taiwan (Formosa).

Credit courses offered in the overseas divisions lead to the Bachelor of Arts degree in General Studies and the Bachelor of Science degree in Military Studies.

EDUCATIONAL PROGRAMS

Credit Courses: Dependent on available facilities and faculty at any given location, credit courses are offered in such fields as botany, business administration, chemistry, economics, education, engineering, English, foreign languages, geography, government and politics, health, history, journalism, public relations, mathematics, microbiology, military studies, music, nursing, nutrition, philosophy, physical education, physics, psychology, recreation, sociology, and speech.

Degree and Certificate Opportunities: University College administers two degree programs: the Bachelor of Arts in General Studies and the Bachelor of Science in Military Studies. Adult part-time students may also pursue other University degree programs.

Advanced courses are available to graduate students at a limited number of locations in the State and in the Pentagon. Personnel at research and development agencies such as the Naval Ordnance Laboratory, the Naval Research Laboratory, the National Bureau of Standards, and others, may pursue courses leading toward graduate degrees in the physical sciences and in engineering. Courses leading to the Master's degree are offered at the Pentagon in business administration and government and politics. Advanced courses for teachers are offered at various locations throughout the State. Graduate courses in education are offered at the Baltimore center.

Students following an adult program with the University of Maryland, who have completed the first two years of an established curriculum, may be granted a certificate of Associate in Arts or Associate in Science, whichever is appropriate, provided that they have completed 60 semester hours, not including basic air science and physical activities. The final 15 semester hours must be completed in residence at the University of Maryland with an average grade of 2.0 ("C"). The student must make formal application for the certificate to the Office of the Registrar. The certificate must be recommended by the college in charge of the curriculum.

Teacher Training Programs: In cooperation with the College of Education, University College offers in-service courses at various locations throughout the State for teachers. Single courses or sequences of courses may be arranged with county school superintendents to enable teachers to attain or renew teaching certificates. In a number of counties, the University, in cooperation with the boards of education, has projected cycles of courses to facilitate long-range planning.

A person intending to qualify as a teacher in any city, county, or state, should obtain a statement of certification requirements for that particular area

On-Campus Full-Time Study, Faculty

and should plan a program accordingly. The Maryland State Department of Education specifies that an in-service teacher may present for certificate credit not more than six semester hours completed during one school year.

Special Programs for Teachers: The staff of the Institute for Child Study of the College of Education offers for teachers a series of courses on human development and on the techniques of child study. The sequence of three courses, Child Development Laboratory I, II, and III, involves the direct year-long study of children as individuals and in groups. It is offered to teachers in many states throughout the country as well as in the State of Maryland. Registrations are administered by University College.

During the past several years, students in the following states have enrolled in the program for credit: Alabama, Arkansas, California, District of Columbia, Florida, Georgia, Idaho, Kentucky, Louisiana, Maryland, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Virginia, and Washington.

Televised Courses: During the fall semester of 1959, the University began cooperating in the offering of courses over local commercial television stations in both Washington and Baltimore. These courses are broadcast as a public service by the stations and are presented by the University as part of its program in continuing education. A nominal registration fee is used to defray the expenses of preparing, administering, and instructing the course. The courses are offered either for credit or for non-credit with some offerings presented exclusively on a non-credit basis. To date these courses have been in the fields of astronomy, child study education, and spanish.

ON-CAMPUS FULL-TIME STUDY

Each semester over 100 military officers and enlisted men are assigned by their respective branches of the service to the campus on a temporary duty basis. The purpose of the temporary duty is to enable them to complete college degree requirements through full-time study. All tuition and other fees are paid by the student who continues to receive his military pay while attending the University. For further information on the Bootstrap Program, consult your installation education advisor or University College.

It is also possible for students who have begun their programs off-campus to come at some future date, usually upon discharge or retirement, to the campus for full-time study in order to complete the curriculum started off-campus.

FACULTY

The content of all courses offered overseas and stateside is under the jurisdiction of the respective academic departments which are responsible for the campus courses. The teaching faculty consists of regular campus faculty members and

part-time lecturers who are approved by the specific Department Head for the courses which they teach. Approvals are made on the basis of credentials submitted to the heads of the several academic departments located at College Park.

LIBRARY SERVICES

In cooperation with the University of Maryland Library, University College operates an off-campus library service. Scheduled bookmobile visits are made to off-campus centers where students may borrow library materials. In certain distant class centers collections of course-related books are placed under the supervision of the local library or of the course instructor for the convenience of students.

The facilities of the University of Maryland Library at College Park are available to enrolled University College students. A separate reading and reference room is maintained in the new Health Sciences Library in Baltimore for use by University College students in that area. Both libraries are open on scheduled evenings.

Overseas, course-related books are sent from base to base with the instructors. In general, some reference materials for the courses offered are available at installation libraries which maintain a close cooperation with the respective headquarters of the overseas divisions of University College.



SECTION II

CONFERENCES AND INSTITUTES DIVISION

The Conferences and Institutes Division's primary orientation is adult education. It is essentially an administrative unit organized to coordinate the University's administrative, academic, and operating facilities with the educational needs of adult groups in business, industry, government, the armed forces, and the professions. A unique feature of the Division is its flexibility to plan, promote, and conduct educational programs for adult groups who wish to come to the campus for brief instructional periods. Although these programs are not designed to grant credit toward degrees, they draw directly upon the research activity and teaching talent of the University's faculty.

Ordinarily, adult education programs conducted at the University of Maryland are coordinated through the Conferences and Institutes Division.* This procedure provides outside groups with a single official agency capable of fully serving their educational needs. This Division facilitates program coordination, assures the maintenance of necessary communication between the adult group and university service agencies, and prevents unnecessary duplication of effort in planning, promoting, and operating the program.

As a State University, the University of Maryland is dedicated to serving the citizens of the State with a "Quantity of Quality" in higher education. The Conferences and Institutes Division reflects this philosophy by presenting, whenever and wherever possible, distinctive programs meeting the educational needs of the adult population.

INITIATING A PROGRAM

Who may initiate a program?

Any College or Department of the University of Maryland

Any professional society or association of a statewide, regional, national, or international nature wishing to meet for an educational purpose.

Any adult group in the state wishing to meet for an educational purpose.

With appropriate clearances, younger persons may also meet on the campus.

The Conferences and Institutes Division itself in fulfilling a clearly demonstrated educational need of a particular group, or in pioneering a new adult education venture.

*Programs conducted by the University's Agriculture Extension Service are under the supervision of the College of Agriculture. For further information, inquiries should be sent to the Director of Extension Service, College of Agriculture, University of Maryland, College Park, Maryland, or telephone WARfield 7-3800, extension 320.

When may the request be initiated?

While there is no hard and fast rule as to the time element required to prepare for a program, it is recommended that all program requests be made to the Conferences and Institutes Division at least three to six months in advance of the proposed date of the program. Some programs, e.g. conventions, may require one year or more in the planning alone. Thus program planners should anticipate their particular needs and submit their requests as early as is practicable in advance of the opening program date.

How may the program be initiated?

All requests to conduct a program at the University of Maryland should be made by communicating with the Conferences and Institutes Division, University College, University of Maryland, College Park.

APPROVAL OF A PROGRAM

Groups desiring to arrange adult education programs such as conferences, institutes, seminars, workshops, clinics, and symposia should be aware that the acceptability of a particular program is based upon three underlying considerations:

1. *Instructional Content.* Most fundamentally, the program must be essentially educational in nature. That is, participants must be provided with a worth-while learning experience in areas appropriate to the University's standing as an institution of higher education.
2. *Academic Control.* The program must lend itself to adequate academic control by the University in two ways:
 - a. *University Approval.* While the University does not dictate program content, it does reserve the right to determine, through the appropriate academic divisions, that University standards are maintained in the fields covered. Where the subject matter of a program is not within the purview of any College or Department, approval or disapproval shall be determined by the Vice President in Charge of Academic Affairs and the Director of Conferences and Institutes.
 - b. *Faculty Participation.* Since the University has a great resource of qualified faculty members in many fields of study, it is not only fitting, but most advantageous to the program itself, that University professors and research specialists be utilized whenever possible.
3. *Administrative Jurisdiction.* The sponsors of any program to be conducted in cooperation with the University will benefit from the experience of the Division of Conferences and Institutes. In order to

insure further the quality and success of any program of adult education, the sponsoring organization may call upon the division to assist with or handle entirely the myriad details of program construction, recruitment of lecturers, printing and promotion, secretarial support, supply of audio-visual equipment and operators, and other related services. Among the administrative services necessarily performed by the Division of Conferences and Institutes are the coordination of arrangements for physical needs including meals, housing, and meeting space; the preparation of the budget based on the actual cost of all program requirements; the collection of fees; and the payment of all bills incurred in operating the program. The prospective program must lend itself to operation on a financially self-sustaining basis. This can be accomplished by prorating the total cost among the anticipated participants, by complete subsidization by the sponsoring organization, or by prorating part of the cost and subsidizing the remainder.

TYPES OF PROGRAM OFFERINGS

The following is a partial listing of programs that have been conducted by the Conferences and Institutes Division. Many of these programs are offered annually by the University in cooperation with the sponsoring group or groups.

- Adult Education Institute
- Agricultural Meteorology Institute
- Armed Forces Education Conference
- Business Management Institute
- Chinese-American Cultural Relations
- Correctional Administration Institute
- Delinquency Control Institute
- Employment Counselors' Training Institute
- High School Choral Workshop
- High School Band Workshop
- Highway Maintenance Institute
- Hospital Management Institute
- Hospital Supervisory Planning Institute
- House Parents Institute
- International Home Economics Congress
- Law Enforcement Institute
- Liberal Arts Institute
- Library Building and Equipment Institute
- Maryland Education Conference
- Maryland Press Institute
- Maryland State Conference on Welfare
- Maryland Student Library Clubs Convention
- Maryland Economic Education Workshop
- Maryland Traffic Institute
- Motor Fleet Supervisor's Institute

Nursing Home Administration Institute
Police Professional Advancement Program
Space Education Institute
Space Research and Technology Institute
World Trade Seminar

For further information write to the Director of Institutes, University College, University of Maryland, College Park, Maryland, or telephone WARfield 7-3800, extension 541.



SECTION III

ADMISSION, CURRICULUM EVALUATIONS, AND ESTABLISHMENT OF CREDIT

ADMISSION

The minimum admission requirements for all University College students are either an acceptable high school diploma or the high school equivalent. The high school equivalent may be established by passing the high school level General Education Development examinations with the following scores: A standard score of 45 or above on each of the five tests or an average standard score of 50 on all five tests, with no score less than 40.

The regulation will apply to the following categories of students, effective September 1, 1961:

1. *High School Graduate*: This student must *immediately* request his high school to send an official transcript to the appropriate admissions office (see your education advisor about the correct address). The student will be allowed to register for one term pending review of his high school records.
2. *High School Equivalent (GED)*: This student must *immediately* request USAFI to send an official copy of his GED test report to the appropriate admissions office (see your education advisor about the correct address). The student will be permitted to register for one term pending clearance of his GED test scores.
3. *Non-High School Graduate or Equivalent*: This student must successfully complete high school before enrolling with the University of Maryland. Successful high school completion may be achieved by any of the following means: attendance at an accredited evening high school, completion of the high school GED at a military testing center (if the individual is on extended active duty), or completion of the high school GED through the county board of education.
4. *College Transfer Students*: This student must *immediately* request that official transcripts from all colleges attended be sent directly to the appropriate office of admissions (see your education advisor for the correct address). Any student who presents at least twelve (12) semester hours of academic credit (exclusive of physical activities) from an accredited college or university, with no grade less than "C", may be enrolled. Students not in good academic standing at the time they last attended an institution must present certification from that institution that they are now eligible for readmission. They will be allowed to register for one term pending review of their records. Correspondence study is not acceptable for this requirement.

Subject to the entrance requirements of the University of Maryland, any adult, civilian or military, may enroll in appropriate University College courses. Credits thus earned are fully accredited and may be transferred to other academic institutions.

No student who has been dismissed for academic or disciplinary reasons from this or any other university will be permitted to enroll in University College. Such students must obtain and present a readmission statement from their former institution before they may enroll.

Special Students: Categories of special adult students include: (a) all students who have not successfully completed 12 semester hours with this University; (b) students who have not formally matriculated for a degree program; (c) students who plan to transfer their Maryland credits to another institution; or (d) students who desire to enroll in Maryland courses exclusively for self-improvement.

Regular Students: A regular student in University College is an adult who is pursuing either the degree of bachelor of Arts in General Studies or Bachelor of Science in Military Studies and has successfully completed 12 semester hours with this University. Requirements for either of these degrees may be completed wherever the necessary courses are available. Students who are fully matriculated in other schools or colleges of the University of Maryland may take courses through University College with the permission of their dean or advisor.

Admission requirements for part-time students who wish to become candidates for University College degrees are the same as for full-time students at the University. A person who desires to become a regular student must submit a formal application to the Director of Admissions together with high school record. For further information about admission as a degree-seeking student, consult your education advisor or a University representative.

Students in the College Park Evening Division: Students enrolled in the on-campus Evening Division at College Park must satisfy the same requirements as other campus students. An adult may be admitted as a special student in the College Park Evening Division under the same regulations as for off-campus special students. Civilian unmarried persons under the age of 21 may be admitted provided, prior to registration, they satisfy the admission requirements for regular students, as stated above.

Undergraduate students currently enrolled and registered in other colleges of the University may enroll in the College Park Evening Division provided they are in good standing and have the *written* permission of their Dean to enroll in the specific course. Such a letter of permission must be presented each time the student registers. It is the student's responsibility to obtain this letter.

Except teachers seeking courses for certification and previously admitted University College students, undergraduate students matriculated in other colleges of the University who have been separated from the University for more than one semester must apply for readmission to the University before they can enroll in the Evening Division. The Evening Division cannot accept students who are on academic probation at this or any other college or university. Any student dropped by the University of Maryland for a second time is ineligible to enroll.

Any evening division student may request transfer to a full-time day degree program subject to the rules and regulations of the University and the college to which he seeks transfer.

Admission to Graduate School: Persons seeking admission to the Graduate School of the University are referred to Section IV.

CURRICULUM EVALUATIONS

Students planning to work toward a degree offered by University College should consult an *official University College representative* for assistance. For further information about counseling opportunities, see Section V.

Official Evaluation (Statement of Advanced Standing): An Official Evaluation, or Statement of Advanced Standing, will be prepared, *but only upon request of the student*, by the Director of Admissions when the following conditions have been fulfilled:

1. Submission of a formal Application for Admission which includes a high school record.
2. Submission of official transcripts (sent directly from the issuing institutions to the Director of Admissions) from all other institutions attended and official transcripts from military service schools where applicable.
3. Submission of official college level GED Test reports from USAFI where applicable.
4. Completion of D. D. Form 295 in duplicate for military personnel.
5. Completion of twelve (12) semester hours of Maryland course work with a minimum grade average of "C".

Unofficial Evaluations: A tentative evaluation may be requested at any time by consulting an *official University College representative*. For further information about opportunities for consultation, see Section V.

Tentative evaluations are possible only when a student presents records (not necessarily transcripts) of courses and grades from other institutions attended, a record of the college-level GED Test scores (if such tests have been taken), and a list of the advanced military service schools which he has successfully completed. With such records a University College counselor can give a reasonable estimate of the student's requirements in relation to either the degree of Bachelor of Arts in General Studies or Bachelor of Science in Military Studies.

ESTABLISHMENT OF CREDIT

Correspondence Courses: For the two degrees administered by University College, a maximum of 12 semester hours of correspondence credit may be accepted provided: (1) the minimum grade earned is at least the equivalent to a Maryland "C"; (2) the course was administered by an accredited institution; and (3) the credit is acceptable by the institution conducting the correspondence course toward one of its own baccalaureate degrees. The University of Maryland does not offer correspondence courses of any kind.

United States Armed Forces Institute (USAFI) college-level correspondence courses may also be accepted for credit. Credit will be granted provided *all lessons have been completed, submitted*, and the work has been validated by successful completion of the appropriate end-of-course examination. Grades "with distinction" or "satisfactory" must be obtained. USAFI correspondence courses

are offered at the freshman and sophomore levels only. No credit is allowed for USAFI self-study or group-study courses.

USAFI credit can be evaluated only upon receipt from USAFI, Madison, Wisconsin, of certification of the completion of college-level correspondence courses and the official end-of-course examination results with identifying code numbers. USAFI has agreed to certify for University of Maryland students the number of correspondence lessons completed. All documents must come directly from USAFI, Madison, or one of its field offices. Documents are not official if sent first to the student or education advisor.

The following regulations govern acceptance of correspondence work taken either with USAFI or other accredited colleges and universities:

a. A maximum of twelve (12) semester hours of correspondence credit may be accepted by the University.

b. A student planning to enroll in correspondence study, either with USAFI or another institution, must first check with the Dean of University College concerning acceptability of the course(s) in the curriculum being pursued. It is the student's responsibility to obtain the Dean's approval.

c. The University of Maryland will not accept correspondence credit earned in public speaking or foreign languages.

Credit by USAFI GED Examination: Up to 24 semester hours of credit will be accepted for successful completion of the USAFI College Level General Education Development (GED) Tests. Only persons on active military duty are permitted to take the GED Tests. Students who establish 24 hours of credit by GED are ineligible for further credit by examination.

To receive GED credit, the following standard scores must be attained by (a) students who enter the University of Maryland on or after September 1, 1961, regardless of when the GED tests were taken, or (b) students who were enrolled prior to September 1, 1961, but who take GED on or after that date:

TEST	STANDARD SCORE	COURSE EQUIVALENT	CREDITS
I	65	English 1, 2	3, 3
II	65	Sociology 1, Elective credit	3, 3
III	65	General Science	6
IV	65	English 3, 4	3, 3

The following conditions govern credit granted for the USAFI GED Examination:

1. The applicant must have completed at least twelve (12) semester credits at the University of Maryland with a minimum average grade of "C" before credit will be accepted for the GED Tests.

2. No credit will be given for English 3 and 4 until the requirements for English 1 and 2 are satisfied.

3. English 8 or 14 will be required of all those who receive full credit for Parts I and IV of the GED.

4. Students graduating after May 1, 1961, will not be given credit for GED Tests taken within one calendar year of completion of graduation requirements;

Establishment of Credit

except in hardship cases a petition may be submitted to have a maximum of six (6) hours of such credit awarded. However, the total of GED and other non-Maryland credit (correspondence courses, courses at other colleges, special examinations) may not exceed six (6) of the final thirty (30) semester hours of work.

5. In lieu of elective credit, students who were enrolled in University of Maryland courses and who successfully completed GED Test II prior to September 1, 1961, may be granted credit for G&P 1, American Government.

6. Credit is not granted for GED Retests taken on or after Sept. 1, 1959.

Other Credit by Examination: Under limited circumstances, credit toward a baccalaureate degree may be established by examination provided the individual can exhibit an area of competence. A request to establish credit by examination must be approved by the head of the academic department, the dean of the academic college in which the examination is offered, and by the dean of the college in which the student is enrolled. Not all academic departments permit or allow credit by examination. A foreign student may not establish credit by examination in freshman or sophomore courses of his native language.

With the exception of the USAFI GED Tests, no more than twenty (20) semester credits can be granted by examination. The fee for establishing credit by examination is \$5.00 per semester hour of credit. Applicants must have completed at least 12 semester credits at the University of Maryland with a minimum average grade of "C" before making application for an examination to establish credit. Credit by examination will not normally be accepted for any of the final 30 semester credits leading to graduation. Non-degree students are ineligible to establish credit by examination in a University of Maryland course.

Transfer Credit for Formal Classroom Courses: The University of Maryland will accept transfer credit for courses taken with other accredited colleges and universities under the following conditions:

a. The courses for which transfer credit is sought must be applicable to the student's curriculum.

b. Each grade received must be a "C" or higher under a marking system equivalent to that of the University of Maryland.

c. The institution must grant credit for the courses toward one of its own baccalaureate degrees.

d. A properly certified transcript must be sent by the institution directly to the Director of Admissions, University of Maryland.

e. Written approval of the Dean of University College must be obtained for any course taken within the last 30 semester hours of the student's degree requirements.

SECTION IV

CURRICULA AND CURRICULAR REQUIREMENTS

Courses offered through University College may be applied to the Bachelor of Arts degree in General Studies or the Bachelor of Science degree in Military Studies. In addition, they may be applied to the degree curricula of other colleges and schools of the University, provided such courses fit into the particular curriculum which a student is pursuing. Every student is, therefore, responsible to the college or school in which he is matriculated as a degree-seeking student.

Counseling by a student's Dean prior to registration is extremely important. For further information, see the discussion of "Counseling" in Section V and the explanation of "Curriculum Evaluations" in Section III of this catalog.

In addition to the general applicability of University College courses, certain colleges permit part-time students to complete their curricular requirements through course offerings of University College or through a combination of enrollments in evening courses of University College and in offerings of specific departments of the particular college.

UNIVERSITY COLLEGE

Requirements Common to All Curricula: The following rules and regulations govern all degrees conferred by University College:

1. A *minimum* of 30 semester hours must be completed in residence with the University of Maryland for a baccalaureate degree. Residence credit is granted for courses taken at University College centers in the United States and overseas.

2. The *last 30 consecutive hours* must be completed in residence. In case of hardship, however, an adult student may petition his Dean in writing to take up to 6 of the last 30 hours at some other recognized institution or by examination. The 6-hour limitation applies to the combined total of credits for the following: (1) classroom or correspondence courses taken at other accredited institutions; (2) credit for college level General Education Development Tests taken within one calendar year of completion of degree requirements; and (3) other examination credit.

3. A minimum average mark of "C" (2.0) in all courses taken with the University of Maryland is required for graduation.

4. Physical education and air science requirements are waived for adult evening students.

5. The completion of 12 hours of foreign language is required, except as noted elsewhere, in order to complete a University College degree. A student who completed two years of a foreign language in high school will not receive credit in college for the first semester of the introductory course in that language unless a period of at least four years has elapsed between the date of high school

graduation and the date of enrollment in the college language course. The 12-hour language requirement should generally be satisfied in one language; however, in hardship cases 6 hours in each of two languages may be permitted. Credit will not be allowed for the first semester of an introductory course in a language; a sequence of at least two must be taken.

6. Credit for 56 academic hours entitles a student to junior standing. Senior standing requires 86 academic hours. For those in the Military Studies program, the figures given are exclusive of credit for Basic ROTC and Physical Activities, but include credit granted for Advanced ROTC.

7. A maximum of 12 semester hours of correspondence work (except in public speaking and foreign languages) will be accepted from approved institutions. Credit for USAFI college level correspondence courses is awarded only at the freshman-sophomore levels. Students should obtain approval before registering for a correspondence course. The University of Maryland does not offer correspondence courses.

8. Transcripts from other accredited colleges and Service schools and results of GED tests and USAFI course grades including lesson completions, must be sent by the issuing institution directly to the Director of Admissions and not to University College.

9. It is the responsibility of the student to remove an "I" from his record. The "I" becomes "F" if it is not removed by the end of the next semester or term in which the course is again offered at the same off-campus center. All "I's" revert to "F's" at time of graduation.

10. The University's Rule 25 requires that a course, retaken because of an "F" or "I", must be retaken under the same conditions under which it was originally taken. For example, a classroom course cannot be "made up" by completing a correspondence course in the subject.

11. Diploma applications for students in the United States and the Atlantic Division must reach the Registrar at least 8 weeks before the date of graduation.

12. To do graduate work, a student must elect a sufficient number 100-level courses within a single department to qualify for admission to the graduate school. The usual number of credits required for entrance is about 24 hours with a minimum grade average of "B". However, the quality of the work is as important as the number of courses. A student desiring to pursue graduate studies should consult the requirements of the graduate school of his choice and plan his program accordingly.

13. Students enrolled in the off-campus program may be authorized to come to the campus to complete their degree requirements. For further information, see the explanation of "On-Campus Full-time Study" in Section I of this catalog. The normal maximum course load is 18 hours for a semester and 6 hours for a summer school.

14. A student who enrolls with Maryland under one curriculum may follow

that program although a revised curriculum is adopted later; or he may elect to take courses in the later curriculum as substitutes for those eliminated from the older curriculum.

15. Credits from other colleges or from USAFI are not assigned to a student not currently enrolled with Maryland. Such credits are held in abeyance until the student re-enters the Maryland program.

16. A student who has taken Maryland courses overseas should notify the appropriate Overseas Division office prior to his rotation date so that his records can be returned to College Park.

THE BACHELOR OF ARTS DEGREE IN GENERAL STUDIES

This curriculum is designed specifically for adult part-time students. It requires a minimum of 120 semester hours of academic credit for graduation. It does not require physical education or ROTC. Opportunity is provided for programs of study in the areas of the social studies and commerce (business administration).

Students matriculated in other colleges of the University of Maryland on campus may not transfer to the Bachelor of Arts curriculum in General Studies and pursue this curriculum as full-time on-campus students.

The curriculum is as follows:

<i>Freshman and Sophomore Years</i>	<i>Credit Hours</i>
*Eng. 1, 2 and 3, 4 or 5, 6	12
**Math or Science	6
**Foreign Language	12
***Government and Politics I	3
*Sociology I or)	
Psychology I or)	
Philosophy I, or)	3
Economics 31)	
History 5, 6	6
Speech 103, 104	6
Electives	12
	<hr/> 60

*Credit by examination may be permitted for these courses (excepting Psychology 1, Philosophy 1, and Economics 31) upon successful completion of the college level General Educational Development Tests. Students who receive 12 credits in English by this means are required to complete English 8 or 14. The credits earned in either of these courses may be used as electives.

**Students following the Commerce Concentration may substitute Principles of Accounting (6 hours) and Principles of Economics (6 hours) for the foreign language Requirement. This is the only exception to the 12-hour foreign language requirement.

***Credit permitted for GED Test II if successfully completed prior to September 1, 1961, by student enrolled prior to that date.

Bachelor of Arts Degree in General Studies

Junior and Senior Years

Credit Hours

Primary Concentration from one Department (100-level courses	15
Secondary Concentration from one or more Departments (100-level courses)	21
Other electives	24
	<hr/>
	60

Primary and Secondary Areas of Concentration: A student will select primary and secondary areas of concentration. These areas may include courses from the departments of Economics, History, Government and Politics, Sociology, Geography, Psychology, Commerce (Business Administration), and Military Studies. In special cases, and with permission of the Dean, the student may select a primary concentration in another academic area. Science or engineering courses cannot be used in either area of concentration.

a. Primary Area: A student must select 15 hours of 100-level (junior-senior) courses in a single department listed above.

b. Secondary Area: A student must select 21 hours of 100-level courses in one or more of the above departments. Normally courses from not more than two different departments should be selected, and these should complement each other. Professional courses in the field of education may be placed in the secondary area.

USAFI College Level GED Tests: Up to 24 hours of GED Test credit may be granted to Armed Forces personnel. The student should carefully study "Credit by USAFI GED Examination" in Section III of this catalog.

Summary of Degree Regulations: The student should be aware of the following regulations which pertain to the degree of Bachelor of Arts in General Studies. In addition, the student should carefully study the "Requirements Common to All Curricula," which appear at the beginning of this Section.

1. Up to 12 semester hours of credit are permitted for successful completion of selected advanced military schools (such as the Army Language School).

2. The maximum combined credit allowed for examination credit including GED credit, correspondence credit, and service school credit may not exceed 36 semester hours.

3. Students following a primary concentration in Commerce may substitute Principles of Accounting (6 hours) and Principles of Economics (6 hours) for the foreign language requirement. This is the only exception to the 12-hour foreign language requirement.

4. Students following the primary concentration in Commerce who complete BA 20, Principles of Accounting, must also complete BA 21 to receive credit for BA 20.

THE BACHELOR OF SCIENCE DEGREE IN MILITARY STUDIES

The Bachelor of Science degree is designed to meet the needs of military personnel. Enrollment is restricted to those who have held or presently hold a commission or warrant in one of the Armed Forces. Enlisted men and other off-campus degree-seeking students must follow the General Studies curriculum as outlined above.

The Military Studies curriculum is as follows:

<i>Freshman Year</i>	<i>Credit Hours per Semester</i>	
	<i>I</i>	<i>II</i>
*English 1, 2—Composition and American Literature	3	3
*Sociology 1—Sociology of American Life or)		
Philosophy 1—Philosophy for Modern Man or)		
Psychology 1—Introduction to Psychology)	—	3
**Government & Politics 1—American Government	3	—
***Math 10, 11—Algebra, Trigonometry and Analytic		
Geometry (or Math 5, 6)	3	3
Foreign Language	3	3
*Science	3	3
	<hr/> 15	<hr/> 15

<i>Sophomore Year</i>	<i>Credit Hours per Semester</i>	
	<i>I</i>	<i>II</i>
*English 3, 4—Composition and World Literature or	3	3
*English 5, 6—Composition and English Literature	3	3
History 5, 6—History of American Civilization	3	3
Economics 31, 32—Principles of Economics	3	3
Speech 103, 104—Speech Composition and Rhetoric	3	3
Foreign Language	3	3
	<hr/> 15	<hr/> 15

<i>Junior Year</i>	<i>Credit Hours per Semester</i>	
	<i>I</i>	<i>II</i>
Military Studies 147, 148—Military History	3	3
Military Studies 151—Military Logistics	3	—
Military Studies 149—Military Law	—	3
†Advanced Air Science	3	3
Electives	6	6
	<hr/> 15	<hr/> 15

*Credit by examination may be permitted for these courses (excepting Psychology 1, Philosophy 1, and Economics 31) upon successful completion of the college level General Educational Development Tests. Students who receive 12 credits in English by this means are required to complete English 8 or 14. The credits earned in either of these courses may be used as electives.

**Credit permitted for GED Test II if successfully completed prior to September 1, 1961, by student enrolled prior to that date.

***Mathematics 18 and 19 may be substituted for Mathematics 10, 11, or 5, 6. The excess credits may be placed in lower-division electives.

†Credit allowed for commissioned or warrant officer service in the Armed Forces.

Bachelor of Science Degree in Military Studies Curriculum

Senior Year

Credit Hours per Semester

	I	II
‡Military Studies 152—Military Leadership.....	—	3
Military Studies 153—Military Policy of the United States	3	—
Two of the following:		
Government and Politics 101—International)	
Political Relations)	
Government and Politics 106—American Foreign)	
Relations)	
Government and Politics 154—Problems of World)	
Politics)	
Government and Politics 197—Comparative)	
Governmental Institutions)	
Advanced Air Science	3	3
‡‡Electives	6	6
	<u>15</u>	<u>15</u>

Summary of Degree Regulations: The following is a summary of regulations and requirements affecting the degree of Bachelor of Science in Military Studies. In addition, the student should carefully study the "Requirements Common to All Curricula" which appear at the beginning of this Section.

1. The requirement for graduation is 120 semester hours, exclusive of Basic ROTC and Physical Activities. Thus, for students who under an older curriculum received 16 hours of credit for Basic ROTC and Physical Activities, a total of 136 semester hours is required for the Military Studies degree. Credit for advanced ROTC is applicable to the 120 hours.

2. Credit for the college level GED Tests and other examinations is limited to a total of 24 semester hours. For further information, see Section III on "Establishment of Credit."

3. Not more than 21 semester hours of credit may be earned through correspondence work and approved courses at certain advanced service schools. (The limit is 17 semester hours for those who enrolled in the Bachelor of Science degree program prior to September, 1958.)

4. Only modern foreign languages are acceptable toward the Military Studies degree; that is, those spoken in some part of the world today. Students coming on campus for two semesters or for a semester and a summer school must have completed 6 hours of foreign language before the date of arrival. For further information regarding language requirements, see "Requirements Common to All Curricula" at the beginning of this section.

‡Credit allowed to those who have served as commissioned or warrant officers in the Armed Forces for at least one year.

‡‡At least 6 semester hours of the electives must be in upper-division (junior-senior) courses. Such Maryland courses are in the 100 series.

5. At least 6 semester hours of the electives specified in the Military Studies curriculum must be in upper-division (junior-senior) courses. At Maryland, such courses are in the 100 series.

COLLEGE OF ARTS AND SCIENCES

Degrees in the College of Arts and Sciences are based primarily upon major and minor concentrations. The student must meet the conditions set forth for both major and minor or required supporting courses by the department in charge of his work. These requirements vary from one department to another. The regulations of the College of Arts and Sciences as well as a complete listing of majors offered in that College may be found in the Catalog of the College of Arts and Sciences, available through the Office of University Relations, University of Maryland, College Park, Maryland.

COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

The College of Business and Public Administration is fully accredited by the American Association of Collegiate Schools of Business. It comprises seven departments offering nineteen curricula. For details of curricula, the student should consult the catalog of the College of Business and Public Administration, available through the Office of University Relations, University of Maryland, College Park, Maryland.

COLLEGE OF EDUCATION

The College of Education offers curricula for students of Education and for teachers in-service. Undergraduate education curricula and advisors are as follows:

1. Academic Education

English—Marie D. Bryan

Foreign Languages—Henry Mendelott

Mathematics—John R. Mayor, H. L. Garstens

Natural Sciences—Orval L. Ulry

Social Sciences—Robert G. Risinger, Jean D. Grambs

Speech—Warren L. Strausbaugh (Minor Only)

2. Agricultural Education (under the College of Agriculture)—V. R. Cardozier

3 Art Education—E. L. Longley, Jr.

4. Business Education—Arthur S. Patrick

5. Childhood Education—James L. Hymes, Jr., Margaret A. Stant

6. Elementary Education—Alvin W. Schindler, Marie Denecke, Glen O.

Blough, Leo W. O'Neill, Alphoretta Fish, William J. Massey, Terry E. Schwarz

7. Home Economics Education—Mabel Spencer
8. Industrial Education—Donald Maley, Paul E. Harrison, Irving Herrick, Eckhart Jacobsen, George R. Merrill, William F. Tierney, Edmund Crosby, Carl Schramm
9. Music Education—Herbert Henke
10. Nursery School—Kindergarten Education—James L. Hymes, Jr., Margaret A. Stant
11. Physical Education—(Men)—Albert W. Woods
12. Physical Education—(Women)—Dorothy Mohr
13. Special Education—Jean R. Hebel (Minor Only)

Graduate Work: Areas in which graduate work is offered include adult education, business education, educational administration and supervision, curriculum and teaching, elementary education, guidance, higher education, history, philosophy, comparative education, home economics education, human development, industrial arts, music education, secondary education, and vocational-industrial education. Graduate-level courses in education are offered only on the Baltimore and College Park campuses.

Specific curriculum requirements may be obtained from the College of Education Catalog or the Graduate School Catalog.

Off-Campus Courses in Education: University College offers courses in education for in-service teachers to permit them to complete a part of the work required for a bachelor's degree, to enable graduate students to work toward advanced degrees, and to fulfill or renew the Maryland State Department of Education certification requirements. Education courses are offered most frequently at the Baltimore Center and at various other centers established in cooperation with the counties of Maryland.

Part-time adult students matriculated in the College of Education may complete many of their general academic course requirements through University College. Students should consult their College of Education advisors prior to registration as to the applicability of specific courses.

GRADUATE SCHOOL

Master's and doctor's degrees are awarded by most of the departments at the University. Graduate programs are administered by the Graduate School in cooperation with the various departments. Students are admitted to the Graduate School only if (1) they hold baccalaureate degrees and (2) their previous work

is in quality and extent acceptable to the department in which they desire to work. A "B" average is required.

Students must have been admitted to the Graduate School prior to registration in any course they seek to take for graduate credit. Courses open to both advanced undergraduate and graduate students, numbered 100 to 199, may not later be applied to graduate work if the student were not admitted to the Graduate School when he registered. The deadline for filing applications and supporting documents is September 1 for the fall semester, January 1 for the spring semester, and June 1 for the summer session.

A student pursuing a graduate program should keep constantly in touch with the graduate advisor of his major department.

It is difficult to proceed toward graduate degrees at off-campus centers conducted by University College. Adequate library and laboratory facilities are not always available and many departments require that a certain number of courses be completed on-campus. Furthermore, graduate work is highly specialized, and the number of students desiring particular courses at a given time and center is seldom large. If the circumstances are favorable, however, graduate work in some fields can be offered off-campus.

Graduate degrees are awarded at the completion of an individually planned program of study. The student must register for each course in full consultation with the departmental advisor concerned. In general, the master's degree is based upon a division of work between a major and a minor. A minimum of half the required courses for this degree must be taken in courses numbered 200 or above. These courses are open only to graduate students. The remaining courses required for the degree may be taken in approved courses numbered between 100 and 199. Courses taken for undergraduate credit may not be applied toward graduate degrees. Information regarding the requirements for all advanced degrees may best be obtained from the Graduate School catalog and by consultation with the head of the department concerned.

University College arranges extensive advanced course programs at several centers. Graduate courses in the sciences and engineering are offered at the National Bureau of Standards, Naval Ordnance Laboratory, Naval Research Laboratory, and Patuxent (Naval Air Test Center).

Graduate courses in business administration and government and politics are offered at the Pentagon. Graduate courses in education are offered through University College on the Baltimore campus and through the College of Education on the College Park campus.

COLLEGE OF HOME ECONOMICS

The College of Home Economics serves Maryland and the surrounding area with its program for the education of women and men interested in social, economic, scientific, and aesthetic aspects of homemaking and of family living in

relation to the community. The educational offerings of the College are planned to help students function effectively and creatively as individuals, as family members, and as responsible citizens; to prepare them for positions for which home economics is a major or minor preparation; and to promote an appreciation and utilization of the findings of research. The College is concerned with contributing to the education for home and family life of women and men enrolled in other schools and colleges as well as those majoring in home economics.

The College of Home Economics is organized into the Departments of Food, Nutrition, and Institution Management; Home Management; Practical Art and Crafts; and Textiles and Clothing. The curricula offered are: general home economics; applied art (merchandising, advertising, crafts, costume and interior design); home economics extension; food and nutrition and related science; home economics education; home management; institution management; textiles and clothing; and textiles and related science.

The over-all function of home economics is to integrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy, and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

Areas in which graduate work is offered include general home economics, food and/or nutrition, and textiles and clothing. Specific curriculum requirements may be obtained from the College of Home Economics catalog or the Graduate School catalog.

Persons wishing to pursue one of the undergraduate curricula in evening or off-campus offerings provided by University College are urged to confer with the Dean of Home Economics relative to impending curriculum innovations anticipated for the 1961-62 school year. General studies required in all home economics curricula are presently available to students having met the admission requirements of the University.

The degree of Associate of Arts is offered for those individuals seeking a general family-life studies program, or courses in home economics may be applied toward the General Studies Curriculum in University College. A steadily expanding program in the several areas of home economics is anticipated to meet the needs of both degree and non-degree seeking students.

SCHOOL OF NURSING

A program for Registered Nurses leading to the degree of Bachelor of Science in Nursing is offered by the School of Nursing in cooperation with University College.

The specific objectives of this program are to bring up to full collegiate level the basic nursing preparation of graduates of three year diploma schools, and to supply the non-professional courses considered desirable as a basis for further cultural and professional education.

Registered nurses who have completed a three year program in an approved school of nursing, and have successfully passed the Maryland State Board of Examination for Registration of Nurses, or the equivalent, and have qualified as registered nurses and meet the admission requirements of the University of Maryland, may pursue studies in the School of Nursing leading to the degree of Bachelor of Science in Nursing.

Accelerated Standing Credit in Nursing: Accelerated standing of 45 credits in nursing is determined through the review of the hospital school record and by the results of the Graduate Nurse Qualifying Examination of the National League for Nursing.

Part-time Study: For the students who are employed on a full-time basis, the normal registration is for 6 semester hours during a 16-week semester. Only exceptional students will be allowed to register for more than 6 semester hours and not more than 9 semester hours, and then only with the approval of an official University advisor.

The Curriculum: The curriculum leading to the Bachelor of Science degree in Nursing is as follows:

General Requirements

Eng. 1—Composition and American Literature	(3)
Eng. 2—Composition and American Literature	(3)
Eng. 3 and 4—Composition and World Literature or	(6)
Eng. 5 and 6—Composition and English Literature	(6)
G & P 1—American Government	(3)
Soc. 1—Sociology of American Life	(3)
H. 5—History of American Civilization	(3)
H. 6—History of American Civilization	(3)

Special Requirements

Microb. 1—Microbiology	(3 or 4)
Microb. 101—Pathogenic Microbiology	(3 or 4)
Chem. 1 and 3—General Chemistry or	(4, 4)
Chem. 11 and 13—General Chemistry	(3, 3)
Zool. 55—Development of the Human Body.....	(2)

Nursing Requirements

Nurs. 9—Nursing in Child Health	(2)
Nurs. 108—Applied Psychology	(2)
Nurs. 156—Public Health Nursing I	(2)
Nurs. 157—Public Health Nursing II	(2)
Nurs. 154—Principles of Management in a Nursing Unit	(2)
Nurs. 158—Biostatistics	(3)
Nurs. 153—Public Health	(2)
Nurs. 199—Pro-Seminar	(2)
Nurs. 159—Clinical Practicum	(2)

Additional Requirements

Hea. 120—Teaching Health	(3)
Psych. 1—Introduction to Psychology	(3)
Sp. 1—Public Speaking or)	
Sp. 103—Speech Composition and Rhetoric).....	(3)
Ed. 90—Development and Learning	(3)
P. E. 160—Theory of Exercise	(3)
Nut. 114—Nutrition for Health Services	(3)
Soc. 164—The Family and Society	(3)

Nursing Electives

Nurs. 189—Workshops and Institutes (Electives may be selected, after consultation with the Adviser).....	(1-6)
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A total of 128 semester credit hours are required for the degree Bachelor of Science in Nursing. A minimum of 30 semester hours must be completed in residence for a baccalaureate degree. Credit earned through University College is residence credit.

Public Health Field Experience: Due to the maturity and background of the registered nurse student, eight weeks of public health field experience in Anne Arundel County, Montgomery County, or Prince George's County is required rather than the thirteen weeks which is required in the basic collegiate program. Registered nurses who have been employed in public health nursing, or have had supervised experience as a student, should submit an official record of this experience for evaluation.

For further information, telephone PLaza 2-1100, Extension 292, in Baltimore.

COLLEGE OF PHYSICAL EDUCATION, RECREATION AND HEALTH

This College provides professional preparation leading to the Bachelor's degree in the following general areas: physical education, recreation, health and safety education, and physical therapy. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to both master's and doctor's degrees are available in physical education, recreation and health. A research laboratory is maintained for faculty members and selected graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body.

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as prescribed by the College of Physical Education, Recreation, and Health, and have completed 120 academic hours, not including air science, and/or required physical activities. Candidates enrolled in the College of Education with a minor in Physical Education or Health Education receive a Bachelor of Science degree upon fulfillment of the requirements as prescribed by that College.

SECTION V

REGISTRATION, FEES AND GENERAL INFORMATION

REGISTRATION

Specific instructions concerning registration are given in the various "Schedules of Classes" which are issued at the beginning of each semester. University College publishes separate course schedules for the following: The Baltimore Division, The College Park Evening Division, The Pentagon, other area military installations, area research and development agencies, and county courses for teachers. Class schedules are available from the various centers or from University College approximately 30 days before the new semester begins.

Registration Periods: An official registration period is scheduled at each center, and all students are expected to complete their registrations on the day or days designated. This includes filing of all registration forms and payment of all fees. Students who fail to register within the prescribed days will be charged a late fee of \$5.00.

Only in exceptional cases will a student be permitted to enter a class later than one week after the beginning of instruction.

Counseling: It is very important for the student to obtain counsel in planning his program. A variety of opportunities are provided for counseling, but *it is the student's responsibility to take the initiative in requesting guidance.*

Most military education centers have education advisors who can give general information about University of Maryland courses, such as scheduled course offerings and general admission requirements.

University representatives make regularly scheduled visits to certain military installations in the Washington-Baltimore area for academic counseling. They are also available for academic counseling during registration periods. For further information, check with your education center or with University College, College Park, telephone WARfield 7-3800, extension 425, or Baltimore, PLaza 2-1100, extension 292.

University College offices are open for counseling from 9:00 a.m. to 8:00 p.m., Mondays through Thursdays, and from 9:00 to 4:30 on Fridays, in either the College Park or Baltimore offices. Students desiring counseling should make a prior appointment.

Persons enrolling in professional education courses should obtain counsel from an advisor in the College of Education prior to registration.

Course Loads: For 16-week courses the normal course load is 6 semester hours. Only exceptional students may be allowed to take more than 6 semester hours with approval of an official *University* advisor.

Changes in Registration

For courses given in 8-week terms, the normal student load is 3 semester hours. Only exceptional students may be allowed to take more than 3 semester hours with approval of an official *University* advisor.

Prerequisites: Students taking off-campus courses must have the approval of their advisors in degree granting colleges to take any course for which the prerequisites have not been met.

CHANGES IN REGISTRATION

Withdrawal From All Courses: Any student compelled to withdraw from *all* University of Maryland courses must submit written notice of withdrawal or complete "Application for Withdrawal From All Courses" UM Form W2Y, giving reasons therefor. (A student dropping one or more courses but continuing with at least one course should refer to the paragraph on "Dropping Courses".) Requests must be sent to the Dean of University College or Director of the Division in which the student is taking courses. Failure to give notice will result in an automatic failing grade and in forfeit of any refund to which the student would otherwise be entitled. No withdrawal will be honored after the last class meeting.

If the request for withdrawal reaches the Dean's office 15 days or sooner after the student has ceased attending classes, the date of the last class attended will serve as the basis for any refund of fees to which he may be entitled. If the request is received after 15 days, the refund will be computed as of the date the application was received in the Dean's office.

Students withdrawing from University College courses will receive a refund of tuition charges, less matriculation, laboratory, and other special fees, in accordance with the following schedule:

Withdrawal Refund Schedule — 16-week Semester

80 per cent	Through 2nd Week
60 per cent	Through 3rd Week
40 per cent	Through 4th Week
20 per cent	Through 5th Week
0 per cent	After 5th Week

Withdrawal Refund Schedule — 8-week Term

60 per cent	Through 1st Week
40 per cent	Through 2nd Week
0 per cent	After 2nd Week

Dropping a Course: A part-time student enrolled in more than one course, who wishes to drop one but continue with the other(s), must notify immediately, either personally or in writing, the Dean of University College or Director of the

Division in which he is taking courses. Failure to give such notice will result in an automatic failing grade. University of Maryland Form R-6-Y is used for dropping courses.

A student may not drop one or more courses after the end of the 5th week of a 16-week semester or the end of the 3rd week of an 8-week term unless he submits a letter giving legitimate reasons for his action. Failing work is not considered a legitimate reason for dropping a course.

The only instance where the student shall be eligible for a partial refund is when he officially drops a course or courses prior to the third class meeting. Such students shall be eligible for an 80% refund.

Other Changes in Registration: Once the student has officially registered, he cannot substitute one course or section of a course for another or add one or more courses after the third week of a 16-week semester or the first week of an 8-week term.

The student cannot change his course registration from credit to audit after the end of the 5th week of a 16-week course or the end of the 3rd week of an 8-week course.

FEES

The following fees generally pertain to University College. For further information regarding fees, the student is referred to the University of Maryland Bulletin, "An Adventure in Learning," and to the respective schedules of course offerings for each term or semester.

Undergraduate Matriculation Fee	\$10.00
Payable at the time of first registration only by all regular undergraduate and special students.	
Graduate Matriculation Fee	\$10.00
Payable at the time of first registration only by all fully admitted graduated students.	
Tuition Fee per Semester Hour	\$12.00
Tuition fees are identical for both undergraduate and graduate part-time course work and are payable in full at the time of registration.	
Late Registration Fee	\$ 5.00
All students are expected to complete their registration during the regularly scheduled registration periods. Those who do not will be charged the late registration fee.	
Change in Registration Fee	\$ 3.00
Payable when a student, enrolled in University College courses, wishes to substitute one course for another or one section of a course for another or add a course after the first week of classes. This fee is not charged to students who drop a course but do not substitute another in its place.	

Fees

Special Examination Fee per Semester Hour	\$ 5.00
Payable by degree-seeking students who wish to establish credit by examination with the University of Maryland. This fee does not apply to GED test credits.	
Graduate Education Student Testing Fee	\$ 5.00
Payable by all new graduate students in education at the time of first registration. During the first semester of graduate work all students are required to take a test battery. For further information, consult the College of Education.	
Transcript Fee	\$ 1.00
The first copy of a transcript will be issued free of charge. For each subsequent transcript the fee of \$1.00 must be paid prior to the issuance of the transcript.	
Baltimore Student Union Fee	\$ 3.00
Payable by all part-time adult students taking courses in the Baltimore city center. This fee is payable even though the student may have paid a full-time student union fee at College Park. Students in Baltimore registering for 12 or more semester hours will pay a full-time fee of \$20.00.	
Graduation Fee for Bachelor's Degree	\$10.00
Payable at the time the student applies for diploma. When a student is within 15 semester hours of graduation he should contact the Office of Registrar in the appropriate division of University College and request an Application for Diploma.	
Graduation Fee for Master's Degree	\$10.00
Payable at the time the student applies for the Master's degree diploma. The student should consult his graduate advisor concerning the time to apply for his diploma.	
Graduation Fee for Doctor's Degree	\$50.00
Payable at the time of application for the diploma. The student should consult his graduate advisor concerning the proper time to make application.	

Laboratory Fees: Laboratory fees are payable for a variety of courses, the amounts varying from course to course. The exact fees are included with the courses listed in the appropriate catalogs and in each Schedule of Course Offerings.

Laboratory fees will be charged whenever the availability of personnel, facilities, and other factors make it possible to offer laboratory instruction. If equipment other than that belonging to the University of Maryland is used, laboratory fees may not be charged, depending upon the arrangements that can be made with the cooperating party.

Fees for Conferences and Institutes: Fees for conferences, institutes, and short courses will be determined in terms of the cost of each such program. For

further information about such fees, contact the Conferences and Institutes Division of University College.

Payment of Fees: All fees are payable in full at the times specified. The University has no provisions for deferred payments. All checks, money orders, or postal notes should be made payable to the University of Maryland. Penalty for returned checks resulting from insufficient funds, closed accounts, stopped payment, etc.: \$5.00 each check.

Definition of State of Residence: Adult students, enrolling in the full-time day program of the University, are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least one year provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the one year period referred to above except in those cases in which the adult was domiciled in Maryland for at least one year prior to his entrance into the armed services and was not enrolled in any school during that period.

The word domicile as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

GENERAL INFORMATION

Residence Credit: Since both the instructors and courses in University College are approved by the appropriate department heads and deans, and since they meet the same academic and faculty standards as do campus courses, University College courses carry residence credit identical to that given for regular campus courses regardless of the geographical location and time of day in which they are offered.

Definition of Credit Unit: The unit of credit is the semester hour, which represents 16 hours of classroom work plus required outside preparation.

Attendance: Regular attendance is expected of all students. Whenever possible the student should notify the instructor *beforehand* when he will have to be absent. In any case, the student should make arrangements with his instructor to make up any classwork missed.

If the student is absent for more than one-fourth of the class meetings, he should immediately process a withdrawal from the course in order to avoid receiving a failing grade (See the section on Withdrawals). If the student has been present for at least 75% of the class sessions but cannot be present for the final session or two, he may request an "Incomplete" grade from the instructor.

Repeated Course: If a student repeats a course, the last grade he receives is final. Normally, the student may repeat a course only once.

Grading System

Candidates for Graduation: When the student is within 15 semester hours of graduation, he must inform his advisor in the appropriate division of University College so that an official graduation review can be made to determine his remaining requirements. He must complete an *Application for Diploma* and submit it to the Registrar's Office at least eight weeks prior to the date on which he plans to complete his degree requirements.

Return of Student Records to College Park: Records of each student participating in the European, Far East, or Baltimore Divisions are kept in the respective division office until it is notified of the student's transfer. *It is the student's responsibility to make such notification.* If notification was not made prior to the student's transfer, he should immediately write to the appropriate division and request that his records be forwarded to the Office of the Registrar, University of Maryland, College Park.

Transcripts: Students may secure official transcripts of their scholastic records upon request to the Office of the Registrar, University of Maryland, College Park. Students formerly enrolled in the European, Far East, or Baltimore Divisions, but who have not yet requested the return of their records (see preceding paragraph), should write directly to the appropriate division for their transcripts, sending a copy of the letter to the Office of the Registrar at College Park. After one complimentary copy of the transcript, a fee of \$1.00 will be charged for each transcript issued. The fee must be paid in advance.

Transfer of University of Maryland Credits to Other Academic Institutions: A student planning to transfer credit earned with the University of Maryland should seek guidance directly from the institution to which he plans to transfer. Only that institution can answer specific questions about its own residence and degree requirements or the applicability of Maryland courses to its curricula.

Academic and General Regulations: Academic and general regulations of the University of Maryland are applicable to the University College Program.

THE GRADING SYSTEM

Marking System: The following grades are used by the University of Maryland: A-Superior Scholarship; B-Good Scholarship; C-Fair Scholarship; D-Passing Scholarship; F-Failure; I-Incomplete; W (with suffix)-Official Withdrawal; X-Ceased to attend class without an official withdrawal.

The Grade of "I": The mark of "I" (Incomplete) is exceptional. A student may be given the mark of Incomplete if his work in a course has been qualitatively satisfactory and if he can present valid reasons to support his request. In no case will the mark of "I" be recorded for a student who has missed more than one fourth of the meetings of the class.

The student *must* consult his instructor, presenting documentation to substantiate his request for an Incomplete. The instructor will make the final decision concerning the granting of the request.

An Incomplete automatically becomes an "F" if it is not removed by the end of the next semester or term in which that subject is again offered (at the same center). A student should realize that it is virtually impossible to remove an Incomplete subsequent to his transfer. An "I" cannot be removed by the grades "W" or "X". All "I's" revert to "F's" at time of graduation.

The Grade of "W": A student officially withdrawing from all courses during the first half of a semester or term shall be given a grade of "WX." After that time he will receive a grade of "WP" in each course in which his work was passing and a grade of "WF" in any course where he was not passing.

The Grade of "X": A mark of "X" will be used in those cases where a student has ceased to attend a class without an official withdrawal provided the student is doing passing work. If he is doing failing work, the grade of "F" will be given. A mark of "X" indicates no record, no prejudice, is terminal, and may not later be changed as in the case of the incomplete mark of "I".

Change of Grade: With the exception of the grade of "I", all grades are final and *cannot* be changed. If a student wishes to establish credit in a course in which he has previously received an "F" or "X", he must re-register, pay the full tuition fee, and repeat the entire course. A student may repeat a course only once, except where he has obtained the written permission of the dean and the head of the department in which he took the course and has had such written permission filed in the Registrar's Office.

Computation of Scholastic Averages: In computing scholastic averages, numerical values are assigned to the marks, per semester credit, as follows: A-4, B-3, C-2, D-1, F-0. The grade of "F" is included in any computation of scholastic averages, but the grades of "X" and "I" are not. However, at the time of graduation all incompletes automatically revert to "F".

RECOGNITION FOR SCHOLASTIC ACHIEVEMENT

A student who has completed a unit of at least 15 consecutive semester hours of Maryland course work with a 3.5 average is eligible for the Dean's List, which is prepared at the end of each semester or term. If the student fails to make the required average after completing a unit of work, he must complete another 15-hour unit to be considered for the Dean's List again. A course included in the computation of the average for one unit of work cannot be used in the computation of the average for a second unit.

Members of the graduating class are eligible for consideration for honors if they have completed a minimum of 60 semester hours of Maryland courses.

Recognition for Scholastic Achievement

Those who rank in the top ten per cent of the graduating class of their college are awarded First Honors; those in the second ten per cent are awarded Second Honors. The names of all honor students are listed in the program of the June Commencement Exercises at College Park.



SECTION VI

CENTERS

University College conducts educational programs at the College Park and Baltimore campuses, in various locations in the State, in industrial establishments, and in Army, Naval, Air Force and other governmental installations in Maryland, the District of Columbia, and overseas.

Stateside, classes are offered at centers ranging from Oakland, approximately 160 miles west of College Park, to Worchester County which borders on the Atlantic Ocean. Centers also range from counties bordering on Pennsylvania to Patuxent in Southern Maryland.

CAMPUS DIVISIONS

BALTIMORE DIVISION

Lombard and Greene Streets

Baltimore, Maryland

EDWARD F. COOPER, M.A., *Director*

FRANCES C. WICKHAM, M.A., *Nursing Advisor*

Offices for the Baltimore Division of University College are maintained in the Administration Building on the Baltimore Campus at Lombard and Greene Streets. The Baltimore division conducts an extensive evening program in Baltimore, and also administers programs in approximately fifteen other centers in the northeastern portion of the State.

During the academic year 1960-61, nearly five thousand students from Baltimore city and surrounding counties were enrolled in some 300 different courses. Students are currently working on degrees in several undergraduate colleges and in the Graduate School of the University.

Scope of Offerings: The Baltimore Division offers courses in the various natural and physical sciences, business administration, economics, education, government and politics, geography, history, industrial education, languages, philosophy, psychology, sociology, speech and English that may be applied toward meeting the requirements of the various undergraduate and graduate degree programs of the University.

A printed schedule of courses for Baltimore and nearby centers is issued each semester by the Baltimore Division. Copies of this schedule may be secured by writing the office of the director or by calling Plaza 2-1100, Extension 292. In addition to Baltimore City, off-campus centers in Baltimore, Howard, Harford, Cecil and Anne Arundel counties are administered by the Baltimore Division.

Service to Business, Industrial, and Professional Groups: In addition to the regular academic offerings listed above, this office provides consultant services and opportunities for certificate programs and in-service training programs that are specifically designed to meet the educational needs of business, industrial and professional groups.

Education: The College of Education supports a steadily expanding offering for teachers and school officials in Baltimore city and in surrounding counties. Courses are offered which teachers may apply toward bachelor's degrees and graduate degrees in education and/or to meet certification requirements.

Those teachers planning to enroll in courses for the purpose of meeting certification requirements are advised to consult with the State Department of Education and/or their local school supervisor.

Students pursuing degree programs are advised to consult with their faculty advisor.

The staff of the Institute for Child Study, College of Education, offers each year a series of courses on Human Development, and on the techniques of child study for members of the educational profession. A sequence of three courses called Child Development Laboratory I, II, and III, which involves the direct year-long study of children as individuals and in groups, is offered to teachers in the field. Teachers should consult their boards of education for offerings in their community. Graduate courses in human development are also available through cooperation of the Institute.

Nursing: The School of Nursing, through University College, offers a program for registered nurses leading toward a Bachelor of Science degree in Nursing. For further information, nurses should refer to Section IV of this catalog, on the School of Nursing, and consult the Baltimore Office of University College, University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland.

Home Economics: Courses conducted in the Baltimore Division by the College of Home Economics, through University College, are selected from the total offerings which constitute the curricula in educational-community, family life, and related art areas of home economics. Subject-content courses in the several areas required for home economics teacher certification will be offered on a rotating basis. Students pursuing degree programs are advised to consult with Home Economics faculty advisors relative to impending changes in basic curricula.

Industrial Education: Courses conducted in the Baltimore Center by the Industrial Education Department are selected from the total offerings which constitute the three curricula administered by the Department; namely, the Industrial Arts curriculum, the Education for Industry curriculum and the Vocational-Industrial teacher certification curriculum. Courses required for

Vocational-Industrial teacher certification are arranged in a two-year cycle so that these persons may obtain the necessary course work within two years.

EVENING DIVISION

College Park, Maryland

JAMES R. QUIMPER, M.A., *Coordinator*

Starting with the spring semester of 1959, the Board of Regents authorized the establishment of an on-campus evening program of college credit courses for adults to be offered through University College. Fifteen courses were offered during the spring semester, primarily lower-division courses. The following fall the University appointed a full-time Coordinator with offices in Room 200 of the Skinner Building on the College Park campus. During the academic year 1959-60, over one thousand students from the surrounding area were enrolled in some 70 different courses. The majority are pursuing a program leading to the Bachelor of Arts degree in General Studies offered through University College, or the Bachelor of Science degree in Education offered through the College of Education.

Admissions: Students are referred to Section III, Admissions, of this catalog for a general description of the requirements for admission to the on-campus Evening Division.

Scope of Offerings: The plan of the Evening Division each semester is to offer courses in the various fields applicable to the Bachelor of Arts degree in General Studies. Many of these courses may be applied toward meeting the requirements of the various undergraduate and graduate degree programs of the University.

A printed schedule of courses offered in the Evening Division is published each semester. Copies may be secured by writing the Coordinator or by calling WARfield 7-3800, Extension 661.

Education: The College of Education offers a program on the College Park campus for teachers and school officials from the surrounding area.

Courses are offered which may apply toward bachelor's degrees and graduate degrees in education and/or to meet certification requirements. Students matriculated in a graduate or undergraduate degree program may enroll concurrently in academic courses offered through the Evening Division. Students should ascertain beforehand whether a specific course is applicable to his or her program. *Separate registration forms are required in cases of concurrent registrations.*

Those teachers planning to enroll in courses for the purpose of meeting certification requirements are advised to consult with the State Department of Education and/or their local school supervisor. It is not necessary for such special

Evening Division

students who have previously been enrolled to be re-admitted to the University prior to registration.

Home Economics: Courses conducted in the Evening Division by the College of Home Economics, through University College, are selected from the total offerings which constitute the curricula in educational-community, family life, and related art areas of home economics. Subject-content courses in the several areas required for home economics teacher certification will be offered on a rotating basis. Students pursuing degree programs are advised to consult with Home Economics faculty advisors relative to impending changes in basic curricula.

OFF CAMPUS STATESIDE CENTERS

The College is prepared to establish credit courses, institutes, and special programs for groups of adults who are qualified to do university work. If facilities permit and demand is sufficient, courses or institutes may be established in any community requesting this service.

The ability of University College to meet all requests for off-campus courses is limited by three factors: (1) The College prefers to use regular University staff members to teach its courses. Occasionally, staff members are not free for off-campus assignments. (2) Courses can be given only where there are adequate reference library materials, laboratories or other necessary facilities. (3) Another limiting factor is student enrollment. Occasionally, a course which has been scheduled must be cancelled if there is insufficient enrollment.

During the 1959-60 school year, programs were offered at the stateside centers listed below:

*Aberdeen Proving Ground
Andrews Air Force Base
*Army Chemical Center
*Baltimore
Bolling Air Force Base
Bureau of Ships
Campus (College Park)
David Taylor Model Basin
*Fort Holabird

Fort Meade
Fort Ritchie
National Bureau of Standards
National Security Agency
Naval Ordnance Laboratory
Naval Research Laboratory
Patuxent River Naval Air Station
Pentagon
Walter Reed Army Medical Center

A schedule of courses for each of the centers described is available approximately six weeks prior to the beginning of each semester.

In cooperation with County Superintendents, University College and the College of Education have developed three-year cycles of course offerings in certain areas of the State. Such long range scheduling permits everyone concerned to plan programs more intelligently. At the invitation of County Superintendents, similar cycles will be developed in other areas of the State.

*Courses in these centers and counties are administered through the Baltimore Division, Lombard and Greene Streets, Baltimore 1, Maryland.

Courses have been offered in the counties indicated below:

Allegany	*Howard
*Anne Arundel	Kent
*Baltimore	Montgomery
Calvert	Prince George's
Caroline	Queen Anne's
*Cecil	Somerset
Charles	St. Mary's
Dorchester	Talbot
Frederick	Washington
Garrett	Wicomico
*Harford	Worcester

Teachers interested in having a program in education initiated in their community should make their requests known to this College through their county superintendent of schools.

ABERDEEN PROVING GROUND

Aberdeen, Maryland

Courses at the Aberdeen Proving Ground are planned to meet the educational needs of military and civilian personnel in the Aberdeen area. Courses are offered in a planned sequence to allow students to pursue military studies and general studies degrees. During the past two years, courses were offered in such fields as business administration, economics, education, English, foreign languages, history, government and politics, mathematics, military studies, nursing, nutrition, psychology, and speech. The Army Education Center at the Proving Ground assists the University in planning this program. The cycle of courses offered at the Proving Ground complements those offered at the Army Chemical Center and at Fort Holabird.

Civilians may enroll for on-post courses by securing special passes at the gate.

Further information concerning this program may be secured by calling Mr. John Lichi, Education Officer, at CRestview 2-4000, extension 43118, Aberdeen Proving Ground, or the Baltimore Office of University College, PLaza 2-1100, extension 292.

*Courses in these centers and counties are administered through the Baltimore Division, Lombard and Greene Streets, Baltimore 1, Maryland.

ANDREWS AIR FORCE BASE

Washington 25, D. C.

During the 1951 spring semester an educational program was initiated at Andrews Air Force Base. The Education Office at Andrews, with the cooperation of this College, plans the program for Andrews several months in advance of each semester.

During the past two years, offerings have included courses in business administration, economics, education, English, foreign languages, geography, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech. Officers and airmen enroll in the various courses leading to general studies, military studies, and other degrees. Civilians may enroll in Andrews courses on a space available basis.

The Andrews educational program complements that of Bolling Air Force Base. Personnel may enroll at either installation, or they may enroll concurrently at both.

Further information may be obtained from Lt. Charles R. Kinder, Base Education Officer, REdwood 5-8900, extension 6268, or this college, WARfield 7-3800, extension 425.

ARMY CHEMICAL CENTER

Edgewood, Maryland

Civilian Program: Courses are offered at the Army Chemical Center during duty hours for civilian personnel employed by the Chemical Center as part of the Army Career Development and Training Program. Courses are offered on both the undergraduate and graduate levels, and are intended to increase the technical competency of participating personnel. The program is planned and scheduled with the cooperation of the Civilian Personnel Section of the Chemical Center.

During the past two years, courses were offered in business administration, chemistry, mathematics, chemical engineering, mechanical engineering, foreign languages, physics, and pharmacology.

For further information concerning the program, call Mr. Henry Newman, Edgewood 1000, extension 6263, or the Baltimore Office of University College, Plaza 2-1100, extension 292.

Military Program: A planned sequence of courses leading toward the military studies and general studies degree is offered at the Army Chemical Center for military personnel of the area. The program is planned in cooperation with the Army Education Office, and it complements the course offerings at the Aberdeen Proving Ground and Fort Holabird.

Bolling AF Base, Bureau of Ships, David Taylor Model Basin,

During the past two years, courses were offered in business administration, economics, foreign languages, government and politics, history, mathematics, military studies, and speech.

Further information concerning the program may be secured by calling Mr. Louis High, Education Officer, EDgewood 1000, extension 21183, or the Baltimore Office of University College, PLaza 2-1100, extension 292.

BOLLING AIR FORCE BASE

Washington 25, D. C.

Since 1948, an education program has been offered at Bolling Air Force Base each semester and summer term. The Education Office at Bolling, with the cooperation of this College, plans each program several months in advance.

The past two year's offerings included courses in business administration, economics, education, English, foreign languages, geography, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech. Officers and airmen enroll in the various courses to pursue general studies, military studies, and other degrees, Civilians may enroll on a space available basis.

The Bolling educational program complements that of Andrews Air Force Base. Personnel may enroll at either installation or they may enroll concurrently at both. Further information may be obtained from Mr. S. Edward Corbin, Education Service Officer, JOhnson 2-9000, extension 679 and 348, or this College, WARfield 7-3800, extension 425.

BUREAU OF SHIPS, DEPARTMENT OF THE NAVY

18th and Constitution Avenue, N.W., Washington 25, D.C.

The educational program at the Bureau of Ships is designed to aid Navy engineers and scientists in the field of engineering, mathematics, and physics. This program is offered in cooperation with the training divisions in the Navy bureaus and this College.

During the past two years, advanced courses were offered in chemical engineering, mathematics, metallurgy, and physics. For further information, call Mrs. Edna K. Trudeau, Training Officer, Room 2438, Main Navy, OXford 6-4847, or this College, WARfield 7-3800, extension 425.

DAVID TAYLOR MODEL BASIN-NAVY DEPARTMENT

Carderock, Maryland

Courses in mathematics and physics were offered at this installation during

Fort Detrick, Fort Holabird, Fort George G. Meade

the past two years. For further details, call Mr. W. H. Struhs, Head, Training and Safety Branch, EMerson 5-2600, extension 394, or this College, WARfield 7-3800, extension 425.

FORT DETRICK

Frederick, Maryland

The educational program at Fort Detrick is planned to advance the technical knowledge of the personnel employed at this post. This program is planned by the Fort Detrick Education Office and this College. During the past two years courses were offered in microbiology.

Further information relative to this program may be obtained from Mr. Frank Hart, Employee Developments Officer, Frederick, MOnument 3-4111, extension 5147, or this College, WARfield 7-3800, extension 425.

FORT HOLABIRD

Dundalk 22, Maryland

A planned sequence of courses, complementing those offered at the Army Chemical Center and at the Aberdeen Proving Ground, are offered each semester to meet the educational needs of military and civilian personnel at this installation. Due to the proximity of Fort Holabird to the University College center at Lombard and Greene Streets, Baltimore, many of the Fort Holabird personnel find it possible to enroll concurrently for courses at both centers. This arrangement provides a wider selection of course offerings.

During the past two years, courses were offered in economics, English, foreign languages, history, mathematics, government and politics, military studies, and speech.

For further information call Mr. Albert Lettre, Education Officer, Fort Holabird, MEDford 3-9000, extension 2110, or the Baltimore Office of this College, PLaza 2-1100, extension 292.

FORT GEORGE G. MEADE

HEADQUARTERS—SECOND ARMY

Fort George G. Meade, Maryland

Courses offered at Fort Meade are designed to meet the educational needs of military and civilian personnel in the area. A regular sequence of courses is arranged for each semester to permit Army personnel to pursue the military studies and general studies degrees.

During the past two years courses were offered at Fort Meade in business administration, economics, education, English, geography, foreign languages, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech.

Further information may be obtained from Mr. Gustaf E. Berglund, Chief, Education Development, Army Education Center, ORchard 4-7141, extension 6421, or this College, WARfield 7-3800, extension 425.

NATIONAL BUREAU OF STANDARDS

Connecticut Avenue at Upton Street, N.W., Washington 25, D.C.

Courses at the National Bureau of Standards are offered under the direction of the Bureau's Education Committee and this College. The program includes graduate and undergraduate courses. During the past two years the educational program at the National Bureau of Standards included courses in electrical engineering, mathematics, metallurgy, and physics. An announcement of courses for each year is available which explains the NBS program.

Further information concerning this program may be obtained from Mr. Joseph Hilsenrath, member of the Education Committee, Mrs. Virginia Maxwell, NBS Registrar, EMerson 2-4040, extension 366, The Manse, or this College WARfield 7-3800, extension 425.

NAVAL ORDNANCE LABORATORY

White Oak, Silver Spring, Maryland

The center at the Naval Ordnance Laboratory serves Navy Department personnel in the Washington area. For the most part, courses at this center are of graduate level.

In addition to its regular program, special courses are offered from time to time in support of new projects. A number of courses are arranged at the College Park campus evenings and Saturdays to amplify the NOL program.

During the past two years, advanced courses were offered in aeronautical engineering, business administration, chemistry, electrical engineering, mathematics, mechanical engineering, and physics. A printed brochure is available which explains the NOL program.

Additional information may be obtained from Mr. D. E. Starnes, Chief, Training Division, HEMlock 4-7100, Extension 411, NOL, or this College, WARfield 7-3800, extension 425.

NAVAL RESEARCH LABORATORY

Washington 25, D.C.

Courses under this program are designed primarily for Navy scientists doing graduate study in the fields of chemistry, engineering, mathematics, and physics and are given in cooperation with the Science Education Section of the Naval Research Laboratory. A printed brochure is available at the Naval Research Laboratory which explains the program.

During the past two years the Naval Research Laboratory program included advanced courses in electrical engineering, mathematics, metallurgy, and physics.

Further information concerning this program may be obtained from Mr. William J. McLaughlin, Training Officer, Personnel Division, or Mr. Joseph Sanborn, Head, Science Education Program, Johnson 3-6600, extension 856, or this College WARfield 7-3800, extension 425.

PATUXENT NAVAL AIR STATION

Patuxent, Maryland

In cooperation with this College and the College of Engineering, the Patuxent Naval Air Test Center has offered a graduate program for its scientific and technical personnel since 1947. More recently, the program has expanded to include "The Patuxent Plan," an undergraduate engineering program, and a management program for installation administrative and supervisory personnel. General self-development opportunities are also provided, and these are open to local civilians.

During the past two years courses have been offered in business administration, chemistry, civil engineering, economics, electrical engineering, English, engineering drawing, history, mathematics, physics, sociology, and speech.

Further information concerning this program may be obtained from Mr. John J. Lancaster, Supervisory Training Officer, Patuxent; or Dr. H. R. Reed, Professor of Electrical Engineering, College Park campus, WARfield 7-3800, extension 454; or this College, extension 425.

THE PENTAGON

Washington 25, D.C.

Established in 1947, the Pentagon program is sponsored by the Military District of Washington's University Center and is operated in cooperation with the Army, Air Force, Navy, and Marine Corps. Only military and civilian Department of Defense personnel in the Washington area are permitted to participate in this program. The respective Services periodically conduct polls to determine the educational needs of military personnel.

The educational offerings at the Pentagon represent the world's largest off-campus university program for military personnel. During the past two years courses were offered in business administration, economics, education, English, foreign languages, geography, government and politics, history, journalism, mathematics, military studies, philosophy, psychology, sociology, and speech. The majority of the students at the Pentagon are primarily interested in courses leading to the Bachelor of Arts degree in General Studies or the Bachelor of Science degree in Military Studies. Others are working toward degrees in various colleges. In addition, a number of students are pursuing graduate degrees.

Further information concerning this program may be obtained during the day from Miss Dorothy Martin and Mr. George Bowman at the Pentagon, Room 3C147, University Center, OXford 7-8015 or OXford 7-2823. Air Force personnel may obtain information from Mrs. Lois Roberts, Pentagon, Room 5D476, OXford 7-7074 or OXford 7-1863; or this College, WARfield 7-3800, extension 425.

FORT RITCHIE

Cascade, Maryland

Courses offered at Fort Ritchie are designed to meet the educational needs of military and civilian personnel located at this post. During the past two years courses were offered in government and politics, history, psychology and speech.

Further information concerning this program may be obtained by consulting Mr. Stanley Kupp, Education Officer, Fort Ritchie, telephone HIGHfield 360, extension 46244, or this College WARfield 7-3800, extension 425.

WALTER REED ARMY MEDICAL CENTER

Washington 12, D.C.

Courses are given at the Army Medical Center in cooperation with the Education Office at the post. Course offerings are planned to meet the needs of military personnel and civilians interested in working for military and general studies degrees and nurses interested in meeting requirements for a professional degree.

Courses in English, foreign languages, government and politics, history, mathematics, military studies, psychology, and speech have been offered during the past two years.

Further information regarding the Walter Reed program may be obtained from Mr. Robert E. Hynes, Education Adviser, RANDolph 3-1000, extension 2055, or this College, WARfield 7-3800, extension 425.

OVERSEAS DIVISIONS

EUROPEAN DIVISION

Heidelberg, Germany

MASON G. DALY, Ph.D., *Director*

DON E. TOTTEN, Ph.D., *Assistant Director*

PHILIP D. WHEATON, Ph.D., *Assistant Director*

JAMES L. COLWELL, Ph.D., *Assistant Director*

JOHN PARR, Ph.D., *Resident Dean, Munich Branch*

JOHN HUNT, M.A., *Assistant Director, United Kingdom*

ROSE BEYER, Dr. Sc., *Mathematics Supervisor*

KLAUS BURKHARDT, B.S., *Language Supervisor*

GUENTER SCHALICH, *Staatsexamen, Assistant Language Supervisor*

ANN R. REED, B.A., *Assistant Director of Admissions*

JOHANNA MARTIN, B.A., *Evaluator, Admissions*

MARGERY O. FRY, B.S., *Assistant Registrar*

GEORGE E. WILLIAMS, B.S., *Comptroller*

JAN HARTMAN, M.A., *Manager, Book Department*

THERESA HYDE, *Administrative Assistant*

History: The success of on-base college credit programs at the Pentagon and military installations in the State of Maryland in the years immediately following World War II, prompted military officials to propose the establishment of a similar program in Europe in 1949. After University officials confirmed the existence of the need and determined the feasibility of such a program, the first classes were opened in October 1949.

Over 1850 students registered for that first term at six Armed Forces Education Centers in Germany: Berlin, Frankfurt, Heidelberg, Munich, Nurnberg, and Wiesbaden. Today, more than 30,000 course enrollments are registered each year in the European Division which has expanded to include over 150 centers in 13 countries of Western Europe, The United Kingdom, North Africa, and the Near East.

The European Division maintains a central office in Heidelberg with its own admissions, registrar and comptroller sections. A branch office in London serves students in the United Kingdom; and the Munich Branch Daytime Program serves freshman and sophomore dependents of military and civilian personnel stationed in Europe.

The European program is operated on an accelerated basis, with classes meeting two evenings each week for eight weeks. There are five terms a year. The terms run generally as follows:

September-November

November-January

February-March

April-May

June-July

Courses Offered: The courses of study arranged for the European Program lead primarily to the Bachelor of Science degree in Military Studies and the Bachelor of Arts degree in General Studies. Courses are offered in business administration, economics, education, English, government and politics, history, foreign languages, mathematics, military studies, philosophy, psychology, sociology, and speech.

Teaching Personnel: A faculty of 400 to 500 full-time and part-time teachers is maintained during each academic term. All full-time lecturers are selected at College Park in consultation with the respective department heads. Some department heads appoint overseas staff members to act as their departmental representatives on matters pertaining to departmental policy. A close liaison is maintained between the department head, his overseas representative, and the Director's Office in Heidelberg.

Foreign language and mathematics courses are usually taught by qualified nationals who have been approved by the respective department heads or their representatives.

European Division Centers: The number of education centers sponsoring classes varies from term to term as influenced by military policy and other factors that result from the movement of military personnel. Classes are being offered during the current academic year at the following centers in Europe, North Africa, and the Near East:

ETHIOPIA	Maison Fort	GERMANY	Bremerhaven
Asmara	Metz	Amberg	Butzbach
	Nancy	Ansbach	Darmstadt
FRANCE	Orleans	Aschaffenburg	Erlangen
Bussac	Orly	Augsburg	Frankfurt
Camp des Loges	Paris	Babenhausen	Friedberg
Chateauroux	Phalsbourg	Bad Aibling	Fulda
Chinon	Poitiers	Bad Kissingen	Furth
Croix Chapeau	SHAPE	Bad Kreuznach	Garmisch
Dreux	Toul Army	Bad Tolz	Geinhausen
Etain	Depot	Bamberg	Giebestadt
Evreux	Toul-Rosieres	Baumholder	Giessen
Fontainebleau	Verdun	Berlin	Goppingen
Jeane d'Arc	Vitry-le-	Bitburg	Hahn
Laon	Francois		Hanau
La Rochelle			

European Division

Heidelberg	Schwabisch	Nouasseur	UNITED KINGDOM
Heilbronn	Hall	Sidi Slimane	Alconbury
Herzo Base	Schweinfurt	NETHERLANDS	Bentwaters
Hof	Sembach	Soesterberg	Brize Norton
Idar-Oberstein	Spangdahlem	NORWAY	Bruntingthorpe
Illesheim	Stuttgart	Oslo	Bushy Park
Kaiserslautern	Ulm	SPAIN	Chelveston
Karlsruhe	Vaihingen	Benidorm	Chicksands
Kirch-Gons	Wackernheim	Constantina	Croughton
Kitzingen	Wertheim	Elizondo	Denham
Kornwestheim	Wiesbaden	Inoges	Fairford
Ludwigsburg	Worms	Madrid	Greenham
Mainz	Wurzburg	Madrid-	Common
Mannheim	Zweibrucken	Torrejon	Grosvenor
Mohringen	GREECE	Moron	Square
Munich	Athens	Rosas	High Wycombe
Neckarsulm	Iraklion, Crete	Sevilla	Kirknewton
Nellingen	ITALY	Soller,	Lakenheath
Neubrucke	Aviano	Majorea	Mildenhall
Oberammergau	Leghorn	Villatobas	Prestwick
Pirmesens	Taranto	Zaragoza	Schulthorpe
Ramstein	Verona	TURKEY	South Ruislip
Rhein-Main	Vicenza	Adana	Upper Heyford
Rothwesten	LIBYA	Ankara	Wattisham
Schonfeld	Tripoli	Istanbul	West Drayton
Schwabisch	MOROCCO	Izmir	Wethersfield
Gmund	Ben Guerir	Mainsite	Wimpole Park
			Woodbridge

Cooperation of Education Branches: The European Program would not be possible except for the valuable assistance and support of the Education Branches of the Armed Services. Full-time Maryland staff members are provided military transportation to and from Europe. Extensive assistance is given to the University in matters involving registration, quarters, and many other matters essential to the operation of the University's program overseas.

Limits on Participation: American civilians entitled to logistical support are admitted to University of Maryland classes, provided that no Armed Services personnel are excluded thereby.

Degree Opportunities: Credit earned in the European Division is considered as residence credit at the University of Maryland. Students may pursue studies leading to degrees at the University of Maryland or may transfer the credits to other institutions subject to their regulations.

The Munich Branch Program: The European Division makes available at Munich a full-time program of freshman and sophomore level courses designed

to meet the needs of Service dependents who are qualified for college work. The courses are of American college standard and are generally those required in the curricula of the College of Arts and Sciences. Regular daytime classes are scheduled throughout an academic year which consists of two semesters. Admission requirements are identical with those of the College Park campus.

Dormitory facilities are available for authorized dependents. Board, room, tuition, and student activities fees amount to approximately \$440 per semester; and books involve a cost of approximately \$50 per year.

European Division and Munich Branch catalogs: Separate catalogs for the European Division and for the Munich Branch are published by the Heidelberg Office. A copy of either catalog may be obtained from University College, College Park, or by addressing a request to: University of Maryland, APO 403, New York, New York.

ATLANTIC DIVISION

College Park, Maryland

BERNARD E. DUPUIS, M.A., *Director*

History: The Atlantic Division comprises the centers in Newfoundland, Greenland, Iceland, Bermuda, and the Azores. The University of Maryland inaugurated the Newfoundland and Iceland programs in 1951, the Greenland program in 1953, the Bermuda program in 1957, and the Azores program in 1959.

The number of students and course enrollments per term averages 600 and 700 respectively.

The division is administered by a director located at University College, University of Maryland, College Park, Maryland.

The Atlantic Division program is operated on an accelerated basis, 3 hour classes normally meeting two evenings each week for eight weeks which comprise one term. All classes meet for a minimum of forty-eight classroom hours regardless of the length of the course. Classes in mathematics meet for sixteen weeks; certain business administration courses meet for eight, twelve, or sixteen weeks depending upon the nature of the course. Variations in course length appear in the Term Schedule which is published at the beginning of each of five terms which constitute the academic year. Allowing for the yearly calendar variations the following 1960/61 term dates may be used as a guide to determine term dates for any year. All new terms begin on a Monday:

Term I August 22, 1960 to October 14, 1960

Term II October 24, 1960 to December 16, 1960

Term III January 16, 1961 to March 10, 1961

Term IV March 20, 1961 to May 12, 1961

Term V May 22, 1961 to July 14, 1961

Courses offered: Courses in business administration, speech, economics, English, foreign languages, government and politics, history, philosophy, military studies, psychology, and mathematics were offered during the past two years.

As in the European and Far East Division, students may complete all degree requirements in residence at the various Atlantic Division Centers. In the past two years, degrees have been awarded at Goose Bay, Harmon Air Force Base, and in the Azores. Two degrees are offered, a Bachelor of Science in Military Studies and a Bachelor of Arts in General Studies. All credits are residence credits at the University of Maryland and may be transferred to other universities subject to their regulations.

Cooperation of Education Branches: This program would not be possible without the valuable assistance and support of the educational personnel at the respective centers. In addition to transportation to and from the bases of assignment, extensive logistic and administrative assistance is given to full-time University resident lecturers. Education center personnel arrange for classrooms, provide instructional supplies, and participate in the registration of students.

Newfoundland: At the request of the North East Air Command, USAF, and the U. S. Navy, the University of Maryland inaugurated the Newfoundland program on July 1, 1951. Currently, courses are offered at the following centers:

Goose Bay Air Base, (Labrador) APO 677, New York, N. Y.

Harmon Air Force Base, Stephenville, APO 864, New York, N. Y.

Naval Air Station, Argentia, FPO 103, New York, N. Y.

Further information regarding the Goose Bay and Harmon centers may be obtained from the Chief, Education Section, Headquarters, Eighth Air Force, Westover Air Force Base, Massachusetts, or the Director, Atlantic Division, College Park. Information regarding the center at Argentia may be obtained from the Information and Education Officer at the naval station, or from the Director, Atlantic Division, College Park.

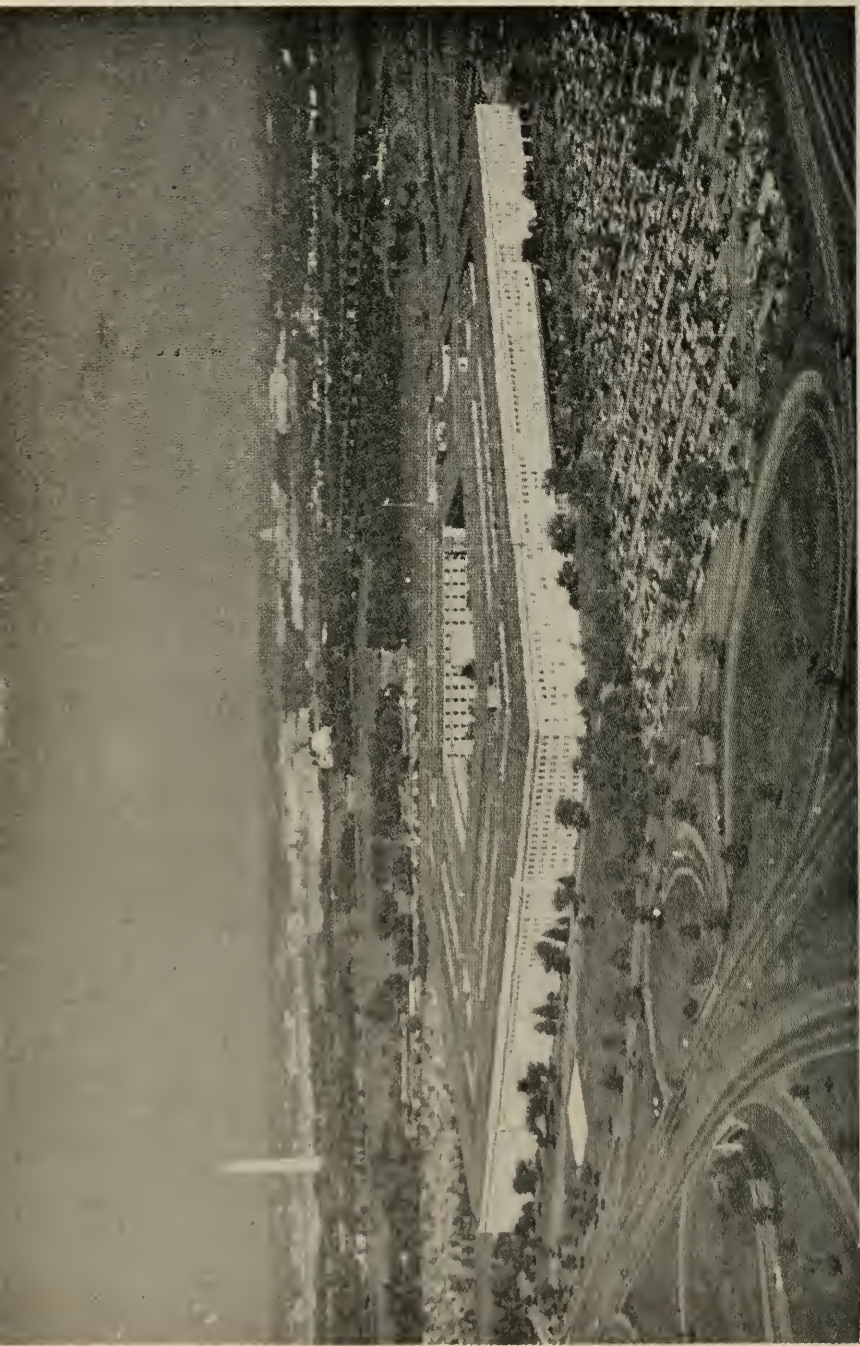
Iceland: At the request of the Military Air Transport Service a center was established at Keflavik, Iceland, in December, 1951. Further information regarding the Iceland center may be obtained from the Education Officer, 1400th Air Base Group, APO 81, New York, N. Y., or the Chief, Education and Libraries, Headquarters, Military Air Transport Service, Scott Air Force Base, Illinois, or the Director, Atlantic Division, College Park.

Greenland: At the request of the North East Air Command, the University of Maryland inaugurated the Greenland program in February, 1953. Currently, courses are offered at the following centers:



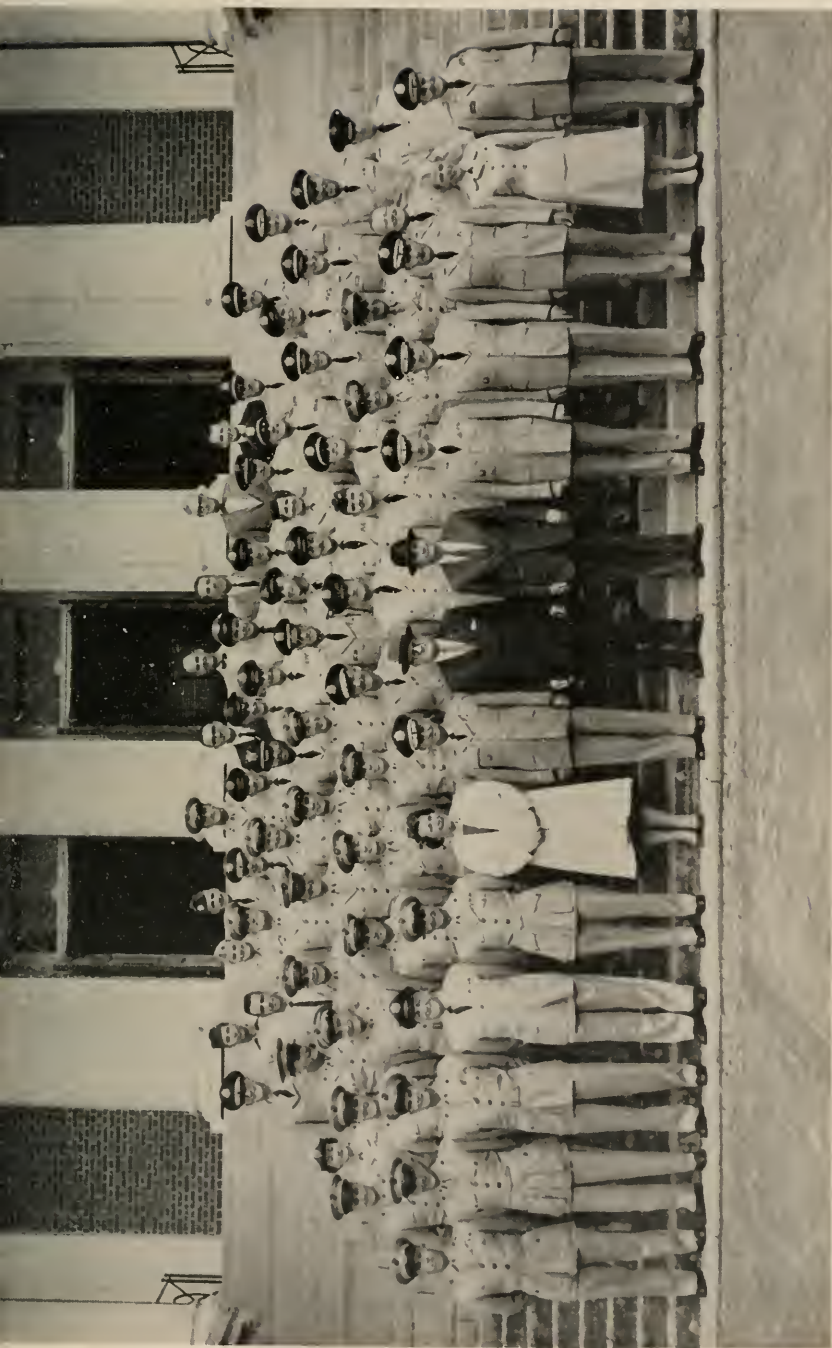
HEADQUARTERS BUILDING FOR A WORLD-WIDE
EDUCATION PROGRAM

The central administrative offices of the University College are located in the Skinner Building on the College Park campus. This building also houses the College of Education. Other principal offices of University College are located in Heidelberg, Germany, and Tokyo, Japan.



THE PENTAGON

Off-campus courses have been available for military and civilian Department of Defense personnel here since the Fall of 1947. With more than 1,000 students each semester, the Pentagon Program is the largest off-campus center serving the Armed Forces. (USAF PHOTO)



CAMPUS BOOTSTRAPPERS

Sixty-seven of the 109 military personnel enrolled as full-time on-campus students in Spring 1961 under "Operation Bootstrap" gather on the steps of the Administration building on the College Park campus. In center, front row, in civilian attire, from right to left, are Brig. Gen. T. D. Stamps, USArmy (Ret.), Assistant Dean, Military Studies, University College; Col. Joseph C. Fehr, USArmy (Ret.), Lecturer in Military Studies; and Mrs. Jean Imman, Secretary.



CONFERENCES AND INSTITUTES

A display of brochures for some of the many conferences coordinated by the Conferences and Institutes Division of University College. The Division administers approximately 40 conferences annually with over 5,000 adults in attendance.

Thule Air Base, APO 23, New York, N. Y.

Sondrestrom Air Base (BW-8), APO 121, New York, N. Y.

Further information regarding the Greenland centers may be obtained from the Director of Personnel Services, Headquarters, 64th Air Division (Defense), Stewart Air Force Base, Newburgh, New York, or the Director, Atlantic Division, College Park.

Bermuda: At the request of the Military Air Transport Service a center was established at Kindley Air Force Base in September, 1957. This center also provides courses for the Naval Operating Base, Bermuda, FPO 138, New York, N. Y. Further information regarding this center may be obtained from the Education Services Officer, 1604th Air Base Wing, APO 856, New York, N. Y., or the Personnel Services Officer, Headquarters, Eastern Air Force, McGuire Air Force Base, Wrightstown, New Jersey, or from the Director, Atlantic Division, College Park.

Azores: At the request of the Military Air Transport Service a center was established at Lajes Air Transport Station, Terceira, Azores in August, 1959. Further information regarding this center may be obtained from the Education Services Officer, 1605th Air Base Squadron, APO 406, New York, N. Y., or from the Personnel Services Officer, Eastern Air Force, McGuire Air Force Base, Wrightstown, New Jersey, or from the Director, Atlantic Division, College Park.

FAR EAST DIVISION

Tokyo, Japan

LESLIE R. BUNDGAARD, Ph.D., *Director*

JOSEPH E. DELLEN, Ph.D., *Associate Director*

MICHAEL E. RUDDY, M.A., *Assistant Director*

WALTER V. HOHENSTEIN, Ph.D., *Assistant Director, Korea*

HERBERT L. NELSON, B.S., *Assistant Director and Comptroller*

GENE H. BUNDGAARD, B.Ed., *Assistant Director of Admissions and Registrar*

History: In August, 1956, the University of Maryland facilities were extended to Japan, Okinawa and Korea. Taiwan and Guam were added during the first year of operation. This program was made possible by arrangements both with the military and with the University of California, which had conducted an educational program in the Far East since 1950. On its withdrawal, the University of California recommended to the Far East Command that the University of Maryland expand its Overseas Program by offering courses to American military and civilian personnel stationed in the Orient. When the

Far East Division

Maryland classes opened in September of 1956, there were 1,820 course enrollments in 82 classes at 42 centers. Average enrollments currently top 4,000 per term.

The program in the Far East, like that in Europe and the Atlantic, is operated on a term basis, with classes meeting two evenings each week during an eight week period. There are five terms each year.

The administrative offices for the Far East Division are located in Tokyo, Japan. The Tokyo office maintains a director, an associate director, an assistant director, a comptroller and an assistant director of admissions and registrations. In addition, an assistant director, with offices in Seoul, administers the Korean program.

Courses Offered: The courses of study arranged for the University's program in the Far East are aimed primarily toward the attainment of the Bachelor of Science degree in Military Studies and the Bachelor of Arts degree in General Studies. Courses are taught in business administration, economics, education, English, foreign languages, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech.

Teaching Personnel: A faculty of between 150 and 180 full-time and part-time teachers is maintained during each academic term. All teachers are selected at College Park in consultation with the respective department heads. A close liaison is maintained between department heads and their respective departmental instructors.

Far East Division Centers: Centers where Maryland courses are offered vary from term to term, as dictated by military policy and other factors necessitated by the movement of military personnel. Classes are currently being offered at the following centers in the Far East:

JAPAN

Atsugi NAS
Brady AB
Camp Drake
Chitose AEC
Fleet Activ. Yokosuka
Fuchu AS
Grant Heights
Itazuke AB
Iwakuni MAS
Johnson AB
Kishine Barracks (Yokohama)
Misawa AB
Sasebo NS
Tachikawa AB

U.S. Army Map Service (Tokyo)
Washington Heights
Yakota AB
Camp Zama

OKINAWA

Kadena AB
Machinato AEC
Naha AB
Sobe AEC
Sukiran AEC

GUAM

Andersen AFB

KOREA

Ascom AEC
 Kimpo AB
 Kusan AB
 Osan AB
 Pusan AEC
 Seoul AEC
 Sub Post K-6 (Pyongtaek)
 Taegu AC
 I Corps
 Camp Red Cloud
 Camp St. Barbara
 Camp Stanley

5th Cav.
 8th Cav.
 12th Cav.
 23rd. Transportation Battalion

7th Infantry Division

East Camp Casey
 7th Div. Arty.
 West Camp Casey
 Camp Hovey
 Camp Kaiser
 Camp Beavers

TAIWAN

1st Cavalry Division

Hq. 1st Cav.
 4th Cav.

Kaohsiung
 Tainan
 Taipei

Cooperation of Education Branches: The Far East Division would not be possible except for the valuable assistance and support of the armed services Education Branches. Full-time staff members are provided military transportation to and from centers in the Pacific area. Extensive assistance is given to the University in matters involving registration, quarters, and other essentials of the University's existence in centers of troop concentration in the Orient.

Degree Opportunities: Credit earned in the Far East Division is considered as residence credit at the University of Maryland. Students may either pursue studies leading to degrees in the University of Maryland, or they may transfer credits earned to other institutions subject to their regulations.

Address for further Information: A separate Far East Division catalog is published by the Tokyo Office. Information concerning the Far East Division may be obtained by writing to: University of Maryland, 722 Washington Heights, APO 94, San Francisco, California; or University College, University of Maryland, College Park.

SECTION VII

COURSE DESCRIPTIONS

CURRENT COURSES WHICH HAVE BEEN TAUGHT IN THE LAST THREE YEARS through the University College are listed below. They are arranged in alphabetical order by academic department. The number of hours of credit is shown by the arabic numeral in parentheses after the title of the course.

Course numbers are designated as follows:

1 to 99—Courses for undergraduates

100 to 199—Courses for advanced undergraduates and graduates. (Not all 100-level courses may be taken for graduate credit.)

200 to 299—Courses for graduates only.

Courses listed in the catalogs of other colleges of the University may be offered by the University College if demand warrants and the academic department concerned approves.

BOTANY

Bot. 1. General Botany. (4)

Lecture and laboratory. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants. Laboratory fee, \$6.00.

BUSINESS ADMINISTRATION

B. A. 10. Introduction to Business. (3)

A survey course treating the internal and functional organization of a business enterprise, its organization and control.

B. A. 20, 21. Principles of Accounting. (3,3)

Required in all Business Administration curriculums. Prerequisite, sophomore standing. The fundamental principles and problems involved in accounting for proprietorships, corporations and partnerships.

For Advanced Undergraduates and Graduates

B. A. 100. Office Operations and Management. (3)

Prerequisite, junior standing. Deals with the principles of scientific management as they apply to the examination, improvement, installation, and operation of the most effective paperwork methods and systems that a given organization can use to achieve its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

B. A. 130. *Elements of Business Statistics. I.* (3)

Prerequisite, junior standing and completion of Math. 5 and 6 or equivalent. Laboratory fee, \$3.50. An introductory course. Emphasis is placed upon statistical inference. Topics covered include statistical observation, frequency distributions, averages, measures of variability, elementary probability, sampling distributions, problems of estimation, simple tests of hypotheses, index numbers, time series, graphical and tabular presentation. Selected applications of the techniques are drawn from economics, industrial management, marketing and accounting.

B. A. 140. *Business Finance.* (3)

Prerequisite, Econ. 140. This course deals with the principles and practices involved in the organization, financing, and reconstruction of corporations; the various types of securities and their use in raising funds; apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

B. A. 150. *Marketing Management.* (3)

Prerequisite, B. A. 159. A study of work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

B. A. 159. *Marketing Principles and Organization.* (3)

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

B. A. 160. *Personnel Management.* (3)

Prerequisite, Econ. 160. This course deals essentially with functional and administrative relationships between management and the labor force. It comprises a survey of the scientific selection of employees, "in-service" training, job analysis, classification and rating, motivation of employees, employee adjustments, wage incentives, employee discipline and techniques of supervision, and elimination of employment hazards.

B. A. 161. *Personnel Management Techniques.* (3)

Prerequisite, B.A. 160. Job evaluation and merit rating and other personnel management techniques generally employed in business.

B. A. 163. *Industrial Relations.* (3)

Prerequisite, Econ. 160. A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

B. A. 164. *Recent Labor Legislation and Court Decisions.* (3)

Prerequisite, B.A. 160 and senior standing. Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

B. A. 166. *Business Communications.* (3)

Prerequisite, junior standing. A systematic study of the principles of effective written

communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

B. A. 168. Management and Organization Theory. (3)

The historical development of management and organization theory, nature of the management process and function and its future development. The roll of the manager as an organizer and director, the communication process, goals and responsibilities.

B. A. 169. Production Management. (3)

Prerequisites, B. A. 11 and 160. Studies the operation of a manufacturing enterprise. Among the topics covered are product development, plant location, plant layout, production planning and control, methods analysis, time study, job analysis, budgetary control, standard costs, and problems of supervision. An inspection trip to a large manufacturing plant is made at the latter part of the semester.

B. A. 177. Motion Economy and Time Study. (3)

Prerequisite, B. A. 169. A study of the principles of motion economy, simo charts, micromotion study, the fundamentals of time study, job evaluation, observations, standard times, allowances, formula construction, and wage payment plans.

B. A. 180, 181. Business Law. (3,3)

Prerequisite, junior standing. Required in all Business Administration curriculums. Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

B. A. 182. Advanced Business Law. (3)

Prerequisites, B. A. 180 and 181. Legal aspects of wills, insurance, torts and bankruptcy.

B. A. 199. Business Policy. (3)

A case study course in which the aim is to have the student apply both what he has learned of general management principles and their specialized functional applications to the overall management function in the enterprise.

For Graduates

B. A. 229. Studies of Special Problems in the Fields of Control and Organization.

(Arranged)

B. A. 262. Seminar in Contemporary Trends in Labor Relations.

(Arranged).

B. A. 265. Development and Trends in Industrial Management (3)

B.A. 266. Research in Personnel Management.

(Arranged).

B. A. 267. Research in Industrial Relations.

(Arranged).

B. A. 269. Studies of Special Problems in Employer-Employee Relationships.

(Arranged).

B. A. 271. Theory of Organization. (3)
(Arranged).

B. A. 399. Thesis.

(Note: The student must take the initiative in arranging to see the professor concerned, at the latter's convenience).

CHEMISTRY

Chem. 1, 3. General Chemistry. (4,4)

Prerequisite, 1 year high school algebra or equivalent. Laboratory fee, \$10.00.

Chem. 11, 13. General Chemistry. (3,3)

An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing. Laboratory fee, \$10.00.

Chem. 15. Qualitative Analysis. (4)

Prerequisite, Chem. 3. Laboratory fee, \$10.00.

Chem. 35, 37. Elementary Organic Chemistry. (2,2)

Prerequisite, Chem. 3. A course for chemists, chemical engineers pre-medical students, and pre-dental students. Two lectures per week.

Chem. 36, 38. Elementary Organic Laboratory. (2,2)

Prerequisites, Chem. 35, 37, or concurrent registration therein. Laboratory fee, \$10.00

Chem. 141, 143. Advanced Organic Chemistry. (2,2)

Two lectures per week. Prerequisites, Chem. 37, 38. An advanced study of the compounds of carbon.

Chem. 144. Advanced Organic Laboratory. (2,4)

Two three-hour laboratory periods per week. Prerequisites, Chem. 37, 38. Laboratory fee, \$10.00.

Chem. 161, 163. Biochemistry. (2,2)

Two lectures per week. Prerequisite, Chem. 33 or 37. This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course in biochemistry than Chem. 81, 82.

ECONOMICS

Econ. 31, 32. Principles of Economics. (3,3)

Prerequisite, sophomore standing. Econ. 31 is a prerequisite for Econ. 32. Required in the Business Administration Curriculums. In Econ. 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced. In Econ. 32 emphasis is placed on price theory, distribution, international trade, and economic development.

Econ. 102. National Income Analysis. (3)

Prerequisite, Econ. 32. An analysis of national income accounts and the level of national income and employment.

Econ. 131. Comparative Economic Systems. (3)

Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system, and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism.

Econ. 132. Advanced Economic Principles. (3)

Prerequisite, Econ. 32. Required for Economics majors. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition.

Econ. 136. International Economic Policies and Relations. (3)

Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade. Full consideration is given to contemporary problems facing international trade and to the impact of governmental policy upon international commercial relations.

Econ. 138. Economics of the Soviet Union. (3)

Prerequisite, Econ. 32 or 37. Required by students in Soviet Area and Language Program. (European Program.) Analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income.

Econ. 140. Money and Banking. (3)

Prerequisite, Econ. 32 or 37. A study of the organization, functions, and operation of our monetary, credit, and banking system; the relation of commercial banking to the Federal Reserve System; the relation of money and credit to prices; domestic and foreign exchange; and the impact of public policy upon banking and credit.

Econ. 160. Labor Economics. (3)

Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail, wage theories, unemployment, social security, labor organization, and collective bargaining.

Econ. 170. Monopoly and Competition. (3)

Prerequisite, Econ. 32 or 37. Changing structure of the American economy, price policies in different industrial classifications of monopoly and competition in relation to problems of public policy.

EDUCATION

Ed. 52. Children's Literature. (2-3)

Prerequisite, English 1, 2. A study of literary values in prose and verse for children.

Ed. 90. Development and Learning. (3)

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

Ed. 102. History of Education in the United States. (3)

A study of the origins and development of the chief features of the present system of education in the United States.

Ed. 107. Philosophy of Education. (2-3)

A study of the great educational philosophers and systems of thought affecting the development of modern education.

Ed. 121. The Language Arts in the Elementary School. (2-3)

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given skills having real significance to the pupils.

Ed. 122. The Social Studies in the Elementary School. (2-3)

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources.

Ed. 123. The Child and the Curriculum. (3)

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children.

Ed. 124. Arithmetic in the Elementary School. (2-3)

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes.

Ed. 125. Art in Elementary Schools. (2)

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools.

Ed. 127. Teaching in Elementary Schools. (2-6)

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience.

Ed. 130. The Junior High School. (2-3)

A general overview of the junior high school. Purposes, functions and characteristics of this school unit, a study of its population, organization, program of studies, methods, staff, and other similar topics, together with their implications for prospective teachers.

Ed. 133. Methods of Teaching Social Studies in Secondary School. (2-3)

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adoption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies.

Ed. 134. Materials and Procedures for the Secondary School Core Curriculum. (3)

This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. Laboratory fee, \$1.00.

Ed. 137. Methods of Teaching Mathematics and Science in Secondary School. (2-3)

Considers such topics as objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of mathematics, the physical sciences, and the biological sciences. Laboratory fee, \$2.00.

Ed. 141. Methods of Teaching English in Secondary Schools. (3)
Content and method in teaching the English language arts.

Ed. 145. Principles and Methods of Secondary Education. (2-3)
This course is concerned with the principles and methods of teaching in junior and senior high schools.

Ed. 147. Audio-Visual Education. (3)
Laboratory fee, \$1.00. Sensory impressions in their relation to learning projection apparatus, its cost and operation; slides, film-strips, and films; physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students.

Ed. 150. Educational Measurement. (3)
Constructing and interpreting measures of achievement.

Ed. 151. Statistical Methods in Education. (3)
Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability, and association.

Ed. 153. The Teaching of Reading. (2-3)
Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs.

Ed. 154. Remedial Reading Instruction. (3)
Prerequisite, Ed. 153 or the equivalent. For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures.

Ed. 160. Educational Sociology. (3)
This course deals with data of the social sciences which are germane to the work of teachers. Consideration is given to implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background which have significance in relation to schools.

Ed. 161. Principles of Guidance. (3)
Overview of principles and practices of guidance-oriented education.

Ed. 163, 164, 165. Community Study Laboratory I, II, and III. (2, 2, 2)
Involves experience from the educational standpoint with the agencies, institutions, cultural patterns, living conditions, and social processes which play significant roles in shaping the behavior of children and adults and which must be understood by individuals working toward school and community improvement. Each participant becomes a member of a group in a given area of study and concentrates on problems which have direct application in his school situation. Readings are integrated with techniques of study.

Ed. 189. Workshops, Clinics, and Institutes. (1-6)

The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached. The following type of educational enterprise may be scheduled under this course heading; workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors.

*For Graduates (offered only in Baltimore Center)**Ed. 203. Problems in Higher Education. (3)*

A study of present problems in higher education.

Ed. 210. The Organization and Administration of Public Education. (3)

The basic course is school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved.

Ed. 211. The Organization, Administration, and Supervision of Secondary Schools. (3)

The work of the secondary school principal. The course includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting.

Ed. 212. School Finance and Business Administration. (3)

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered.

Ed. 214. School Plant Planning. (2)

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment.

Ed. 216. Public School Supervision. (3)

The nature and functions of supervision; various supervisory techniques and procedures; human relationship factors; and personal qualities for supervision.

Ed. 217. Administration and Supervision in Elementary Schools. (3)

Problems in organizing and administering elementary schools and improving instruction.

Ed. 218. School Surveys. (2-6)

Prerequisite, consent of instructor. Includes study of school surveys with emphasis on problems of school organization and administration, finance and school plant planning. Field work in school surveys is required.

*Ed. 219. Seminar in Educational Administration and Supervision. (2-4)**Ed. 223. Practicum in Personnel Relationships. (2-6)*

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers,

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school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems.

Ed. 225. School Public Relations. (3)

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored.

Ed. 226. Child Accounting. (2)

An inquiry into the record keeping activities of the school system, including an examination of the marking system.

Ed. 227. Public School Personnel Administration. (3)

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits.

Ed. 229. Seminar in Elementary Education. (2)

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in Education.

Ed. 234. The School Curriculum. (2-3)

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design.

Ed. 235. Principles of Curriculum Development. (3)

Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement.

Ed. 245. Introduction to Research. (2)

Intensive reading, analysis, and interpretation of research; applications to teaching fields; the writing of abstracts, research reports, and seminar papers.

Ed. 250. Analysis of the Individual. (3)

Prerequisites: Ed 161, Ed 151, Ed 263 or permission of instructor. Collecting and interpreting non-standardized pupil appraisal data; synthesis of all types of data through case study procedures.

Ed. 253. Occupational Choice: Theory and Information. (2)

Research and theory related to occupational and educational decisions school programs of related information and other activities in occupational decisions.

Ed. 254. Organization and Administration of Guidance Programs. (2)

Prerequisite—Permission of instructor. Instilling the guidance point of view and implementing guidance practices. All guidance courses except Seminar are prerequisites.

Ed. 260. School Counseling: Theoretical Foundations and Practice. (3)

Prerequisites, Ed. 161, 250, 253. Exploration of counseling theories and the practices which stem from them.

Ed. 261. Practicum in Counseling. (2-6)

Prerequisites, Ed. 260 and permission of instructor. Sequence of supervised counseling experiences of increasing complexity. Limited to eight applicants in advance. Two hour class plus laboratory.

Ed. 262. Measurement in Pupil Appraisal. (3)

Prerequisites: Ed. 150. Study of group tests typically employed in school testing programs; discussion of evidence relating to the measurement of abilities.

Ed. 265. Theory of Measurement. (2)

Prerequisites, Ed. 150 and 151. Treats such topics as theory and techniques used in various scaling methods, test analysis, predictive accuracy of scores, and equivalence of scores. For students desiring more advanced treatment of problems.

Ed. 267. Curriculum Construction Through Community Analysis. (2)

Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on the Baltimore area.

Ed. 269. Seminar in Guidance. (2)

Systematic examination of research related to various guidance topics. For advanced guidance majors, and others by permission of instructor.

Ed. 271. Advanced Statistics in Education. (3)

Prerequisite, Ed. 251 or equivalent. Primarily for the education student desiring more advanced work in statistical methodology. Survey of major types of statistical design in educational research; application of multivariate statistical techniques to educational problems.

Ed. 281. Source Materials in Education. (2)

Bibliography development through a study of source materials in education, special fields in education, and for seminar papers and theses.

Ed. 288. Special Problems in Education. (1-6)

Master of education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number. Course card must have the title of the problem and the name of the faculty member under whom the work will be done.

Ed. 399. Research—Thesis. (1-6)

Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

CHILDHOOD EDUCATION

C. Ed. 110. Child Development III. (3)

Developmental growth of the child from the prenatal period through the early childhood years, with implications for home and school practice. For students in other colleges of the University.

E. Ed. 115. Children's Activities and Activities Materials. (3)

Prerequisites, C. Ed. 50, 51, or 110. Laboratory fee, \$5.00. Storytelling; selection of books for pre-school children; the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials for nursery school and kindergarten.

Education

C. Ed. 116. *Creative Music for Young Children.* (2-3)

Prerequisite, Mus. 16 or equivalent. Creative experiences in songs and rhythms; correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level.

C. Ed. 140. *Curriculum, Instruction, and Observation—Early Childhood Education (Nursery School and Kindergarten).* (3)

Prerequisites, C. Ed. 50, 51 or 110. Philosophy of early childhood education; observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which educational objectives are attained.

C. Ed. 145. *Guidance of Young Children.* (3)

Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems.

C. Ed. 160. *Methods and Materials in Parent Education.* (2-3)

A survey of child development, child guidance, and related fields; a review of current materials, books, periodicals, leaflets, films, skits; study of individual parent conferences, guided observation, discussion leading, role playing, preparing materials and programs for parent groups and television skits, with laboratory practice through the group itself.

HUMAN DEVELOPMENT EDUCATION

H. D. Ed. 102, 103, 104. *Child Development Laboratory I, II and III.* (2, 2, 2)

Prerequisite, general or educational psychology or any course in Human Development. These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual; presents the accumulating data from time to time to the study group for criticism and group analysis, and writes an interpretation of the dynamics underlying the child's learning, behavior and development.

H. D. Ed. 200. *Introduction to Human Development and Child Study.* (3)

This course offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week free for this purpose. The course is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study.

H. D. Ed. 201. *Biological Bases of Behavior.* (3)

This course emphasizes that understanding human life, growth and behavior depends on understanding the ways in which the body is able to capture, control and expand energy. Application throughout is made to human body processes and implications for understanding and working with people. H. D. 250 a or b or c must be taken concurrently with this course. (Prerequisite, H. D. Ed. 200.)

H. D. Ed. 202. *Social Bases of Behavior.* (3)

This course analyzes the socially inherited and transmitted patterns of pressures, expectations and limitations learned by an individual as he grows up. These are

considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group. H. D. Ed. 250a or b or c must be taken concurrently with this course. (Prerequisite, H. D. Ed. 200.)

H. D. Ed. 250a, 250b, 250c. Direct Study of Children. (1, 1, 1)

This course provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in Human Development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in Human Development may use records from their own classrooms for this course. May not be taken concurrently with H. D. Ed. 102, 103, 104, or H. D. Ed. 200.

INDUSTRIAL EDUCATION

(The courses below do not constitute a complete listing of Industrial Education offerings but are the courses currently offered at off-campus centers.)

Ind. Ed. 1. Mechanical Drawing. (2)

Two laboratory periods a week. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters. Laboratory fee, \$5.00.

Ind. Ed. 2. Elementary Woodworking. (2)

Two laboratory periods a week. This is a woodworking course which involves primarily the use of hand tools. The course is developed so that the student uses practically every common woodworking hand tool in one or more situations. There is also included elementary wood finishing, the specifying and storing of lumber, and the care and conditioning of tools used. Laboratory fee, \$5.00.

Ind. Ed. 28. Electricity I. (2)

Two laboratory periods a week. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio. Laboratory fee, \$5.00.

Ind. Ed. 48. Electricity II. (2)

Principles involved in A-C and D-C electrical equipment, including heating measurements, motors and control, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics. Laboratory fee, \$5.00.

Ind. Ed. 50. Methods of Teaching. (2)

For vocational and occupational teachers of shop and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; the use of instructional aids; measuring results and grading student progress in shop and related technical subjects.

Ind. Ed. 60. Observation and Demonstration Teaching. (2)

(Offered in Baltimore only.) Prerequisite, Educational Psychology and/or Methods of Teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and critiques constitute the remainder of scheduled activities in this course.

Education

Ind. Ed. 124 a, b. Organized and Supervised Work Experience.

(3 credits for each internship period, total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry". The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him as regards the job opportunities which have optimum learning value.

The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences.

The time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internship periods are required. The two internships may be served with the same business or industry.

The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes.

More complete details are found in the handbook prepared for the student of this curriculum.

Ind. Ed. 143. Industrial Safety Education I. (2)

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

Ind. Ed. 144. Industrial Safety Education II. (2)

This course presents exemplary safety practices through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

Ind. Ed. 150. Training Aids Development. (3)

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such aids will be required.

Ind. Ed. 161. Principles of Vocational Guidance. (2)

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

Ind. Ed. 164. Shop Organization and Management. (2)

This course covers the basic elements of organizing and managing an Industrial Education program including the selection of equipment and the arrangement of the shop.

Ind. Ed. 165. Modern Industry. (3)

This course provides an overview of manufacturing industry in the American social, economic and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like.

Ind. Ed. 167. Problems in Occupational Education. (2)

The purpose of this course is to obtain, assemble, organize, and interpret data relative

to the scope, character and effectiveness of occupational education.

Ind. Ed. 168. Trade or Occupational Analysis. (2)

Provides a working knowledge of occupational and job analysis which is basic in organizing vocational-industrial instruction. This course should precede Ind. Ed. 169.

Ind. Ed. 169. Course Construction. (2)

Surveys and applies techniques of building and reorganizing course materials for effective use in vocational and occupational schools.

Ind. Ed. 170. Principles of Vocational Education. (2)

The course develops the Vocational Education movement as an integral phase of the American program of public education.

Ind. Ed. 171. History of Vocational Education. (2)

An overview of the development of Vocational Education from primitive times to the present.

For Graduates

Ind. Ed. 207. Philosophy of Industrial Arts Education. (3)

This course is intended to assist the student in his development of a point of view as regards Industrial Arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

Ind. Ed. 214. School Shop Planning and Equipment Selection. (3)

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

Ind. Ed. 216. Supervision of Industrial Arts. (2)

Ind. Ed. 240. Research in Industrial Arts and Vocational Education. (2)

This is a course offered by arrangement for persons who are conducting research in the areas of Industrial Arts and Vocational Education.

Ind. Ed. 241. Content and Method of Industrial Arts. (3)

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for Industrial Arts instruction are studied and practiced.

Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education. (2)

MUSIC EDUCATION

For Advanced Undergraduates and Graduates

Mus. Ed. 128. Music for the Elementary Classroom Teacher. (2-3)

Prerequisite, Mus. 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid both music specialists and classroom teachers. It includes an outline of objectives and a survey of instructional methods.

For Graduates

Mus. Ed. 204. Current Trends in Music Education (Seminar). (2)

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels.

SCIENCE EDUCATION

Sci. Ed. 105. Science in the Elementary Schools. (2-3)

General science content and teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observation, field trips, and use of audio-visual materials. Emphasis is on content and method related to science units in common use.

SPECIAL EDUCATION

Sp. Ed. 170. Introduction to Special Education. (3)

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures.

Sp. Ed. 171. Characteristics of Exceptional Children. (3)

A. Mentally Retarded—B. Gifted.

Studies the diagnosis, etiology, physical, social and emotional characteristics of exceptional children. Describes how the educational program should be modified to utilize the full capacity of these children.

Sp. Ed. 172. Education of Exceptional Children. (3)

A. Mentally Retarded—B. Gifted.

Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Prerequisite, Sp. Ed. 171 or equivalent)

Sp. Ed. 173. Curriculum for Exceptional Children. (3)

A. Mentally Retarded—B. Gifted.

Examines the principles and objectives guiding curriculum for exceptional children. Gives experience in developing curriculum for these children. Studies various curricula currently in use. (Prerequisite, Sp. Ed. 171 or equivalent)

Sp. Ed. 278. Seminar in Special Education. (2)

An overview of educational children.

AERONAUTICAL ENGINEERING

For Graduates

Aero. E. 200, 201. Advanced Aerodynamics. (3, 3)

Prerequisites, Aero. E. 115, Math. 64. Review of thermodynamic and physical properties of gases. One dimensional flow of a perfect compressible fluid. Shock waves. Fundamental equations of aerodynamics of a compressible fluid. Two-dimensional linearized theory of compressible flow. Two-dimensional transonic and hypersonic flows. Exact solutions of two dimensional isotropic flow. Linearized theory of three-dimensional potential flow. Exact solution of axially symmetrical potential flow

Method of characteristics. Nozzle design; flow in jets; rotational flow of compressible fluids. One-dimensional viscous compressible flow. Laminar boundary layer of compressible fluids.

Aero. E. 202, 203. Advanced Aircraft Structures. (3, 3)

Prerequisites, Math. 64 and Aero. E. 113, 114, or permission of the instructor. Introduction to two dimensional theory of elasticity, energy methods, plate theory, theory of elastic instability. Aerodynamic heating of structures, thermal stresses, creep, creep bending and buckling, visco-elastic theory.

Aero. E. 204, 205. Aircraft Dynamics. (3, 3)

Prerequisites, Math. 64 and Aero. E. 114. Dynamics of a rigid body and applications to airplane dynamics. Generalized coordinates and Lagrange's equations. Vibrations of simple systems. Dynamics of elastically connected masses. Influence coefficients. Mode shapes and principal oscillations. Transient stresses in an elastic structure. Wing divergence and aileron reversal. Theory of two dimensional oscillating airfoil. Flutter problems. Corrections for finite span. Compressibility effects.

Aero. E. 206, 207. Advanced Aircraft Powers Plants. (3, 3)

Two lectures and one laboratory period a week. Prerequisites, M. E. 100; Aero. E. 109, 110. Special problems of thermodynamics and dynamics of aircraft power plants; jet and rocket engines. Research in power plant laboratory.

Aero. E. 210. Aerodynamic Theory. (3)

Prerequisites, Aero. E. 101, Math. 64. Fundamental equations in fluid mechanics. Irrotational motion. Circulation theory of lift. Thin airfoil theory. Lifting line theory. Wind tunnel corrections. Propellor theories. Linearized equations in compressible flow.

Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic). (3)

The design and use of wind tunnels (supersonic). Review of basic aerodynamics and thermodynamics. Problems in supersonic tunnel design such as pumping, power supply, condensation and driers. Equipment for measuring results, including balances, manometers, optical instruments, such as schlieren, spark illumination and X-ray equipment. Investigation in supersonic wind tunnels are described with special reference to similitude required for conversion to full scale.

Aero. E. 212, 213. Bodies at Supersonic Speeds. (3, 3)

Brief review of gas dynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamic problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles.

Aero. E. 214. Seminar.

(Credit in accordance with work outlined by Aeronautical Engineering staff.) First and second semesters.

Aero. E. 216. Selected Aeroballistics Problems. (3)

Physical processes and aerothermodynamic laws connected with the flow around supersonic missiles. Boundary layer problems and the transfer of heat and mass.

Aero. E. 217. Aerodynamics of Viscous Fluids. (3)

Prerequisites, Aero. E. 101, Math. 64. Fundamental concepts. Navier-Stokes' equations. Simple exact solutions. Laminar boundary layer theory. Pohlhausen method. Turbulent boundary layer; mixing length and similarity theories. Boundary layer in compressible flow.

Aeronautical Engineering, Chemical Engineering, Nuclear Engineering

Aero. E. 218. Selected Topics in Aerodynamics. (3)

Prerequisites, Aero. E. 210, 115. Topics of current interest and recent advances in the field of aerodynamics.

Aero. E. 399. Research

Credit in accordance with work outlined by Aeronautical Engineering Staff.

CHEMICAL ENGINEERING

Ch. E. 240, 241. Advanced Heat and Mass Transfer. (3, 3)

Elective of graduate students in Chemical Engineering and others. Prerequisite, permission of the Department. The technical and scientific elements of the mathematical theory of heat and mass transfer.

Ch. E. 399. Research in Chemical Engineering. Research in Nuclear Engineering.

Credit hours to be arranged. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. Laboratory fee \$8.00 per semester (Research in Chemical Engineering). Laboratory fee, \$10.00 per semester (Research in Nuclear Engineering).

NUCLEAR ENGINEERING COURSES

Ch. E. 140. Introduction to Nuclear Technology. (2)

Two lectures a week. Prerequisites, Math. 21 and Phys. 21. Required of students in Departments of Chemical Engineering, Electrical Engineering, and Mechanical Engineering. Engineering problems of the different parts of the nuclear energy complex, including basic theory, nuclear reactor design, and isotopic and chemical separations are discussed. The emphasis is on the nuclear fission reactor. This is an orientation course for those only generally interested in applied atomic energy.

Ch. E. 142. Environmental Considerations of Nuclear Engineering. (3)

Three lectures a week. Prerequisite, permission of instructor. Engineering analysis of protection of the public and the environment from the hazards of nuclear energy operations. Emphasis is on the handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases are included.

Typical problems encountered from mining of ores through nuclear reactor operations and chemical separations are considered. Legislative and economic factors, site selection, plant design and operations as related to the environment are discussed.

Ch. E. 301. Seminar in Nuclear Engineering. (1)

One meeting a week. Survey of nuclear engineering literature, and oral presentation of prepared reports. Since the content of this course is constantly changing, a student may receive a number of credits by re-registration.

Ch. E. 302, 303. Nuclear Reactor Engineering. (3, 3)

Three lectures a week. Prerequisite, permission of instructor. Introduction to the engineering problems of the design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, control, etc. Emphasis is toward commercial nuclear reactors.

Ch. E. 311, 312. Nuclear Separation Engineering. (2, 2)

Two lectures a week. Prerequisite, permission of instructor. Application of chemical engineering to the chemical and isotopic separations necessary for nuclear reactor operation. These separations include (1) processing of uranium, thorium and other ores, (2) chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors, (3) treatment and disposal of radioactive wastes, (4) isotopic separation of U235 and heavy water.

Ch. E. 315. Non-Power Uses of Nuclear or High Energy Radiation. (2)

Two lectures a week. Prerequisite, permission of instructor. An engineering survey of the current applications and those under development. Included are such uses of radiation as producing valuable radioactive and stable isotopes, synthesizing chemicals, and preserving foods. The changes in the design and operation of power-only nuclear reactor complexes required for such additional applications are discussed.

METALLURGY

Met. 150, 151. Physical Metallurgy. (3, 3)

Met. 152, 153. Physical Metallurgy Lab. (2, 2)

Laboratory fee, \$8.00.

Met. 164, 166. Thermodynamics of Metallurgical Processes. (3, 3)

Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190. The application of the principles of thermodynamics to metallurgical systems with emphasis on steel making; laws of chemical reactions; materials and reactions in steel making processes; applications of theory to steel making; applications of theory to selected non-ferrous systems.

Met. 188, 189. Alloy Steels I, II. (2, 2)

Two lectures per week. Prerequisites, graduate or undergraduate standing. (Met. 188 is not prerequisite to Met. 189). Recent advances in the physical metallurgy of steel; ferrite, cementite, and austenite; the isothermal transformation of austenite; decomposition of austenite by continuous cooling; the effects of various metallurgical treatments on the mechanical properties of steels. The properties of quenched and tempered steels; importance of hardenability in engineering applications, calculation of hardenability; variables affecting hardenability; intensifiers; effects of alloying elements on the mechanical properties of steels; efficient use of alloying elements in steel. (Note: To be offered at off-campus naval installations as determined by departmental and registration requirements.)

Met. 228. Seminar in Metallurgy. (1)

One meeting a week. Required of graduate students in metallurgical curriculum. Survey of metals literature, and oral presentation of prepared reports. The content of this course is constantly changing, so a student may receive a number of credits by re-registration.

Met. 230, 231. Mechanical Metallurgy. (3, 3)

Three lectures a week. Prerequisites, Math. 114, 115; Met 182, 183. Theory of plastic flow and rupture of polycrystalline metals; the influence of combined stresses, rate of deformation and temperature variation on the flow and rupture of metals. Flow and fracture in single crystals; theoretical crystal plasticity, theory of failure, recovery, recrystallization, and texture formation.

Met. 232, 233. Advanced Physical Metallurgy. (3, 3)

Three lectures a week. Required of graduate students in metallurgical curriculum. The principles of X-ray metallography; the atomic theory of metals; magnetic materials; phase equilibria; review of important binary and ternary system, diffusion and transformations in the solid state. (Offered at the Navy Department.)

Met. 238. Metallurgy of Nuclear Reactor Materials I. (2)

Two lectures a week. Prerequisites, Met. 150, 151. Theory and practice relating to metals such as uranium, thorium, and plutonium. The preparation of such metals in their purest state for use in nuclear reactors. The physical, metallurgical and mechanical characteristics of fissionable metals, their melting, casting, fabrication, and heat treatment. The alloys of uranium, thorium, and plutonium. Theoretical considerations and precautions in their preparation, investigation and use. Discussion of phase diagrams of nuclear alloy systems.

Met. 239. Metallurgy of Nuclear Reactor Materials II. (2)

Two lectures a week. Prerequisite, Met. 238. Theory and practice of nuclear metals used in reactors including structural materials such as beryllium and zirconium, and metals used for transfer of heat such as sodium, bismuth, and various low melting alloys. Discussion of pertinent phase diagrams. Radiation damage, mass transfer, and other specialized effects.

Met. 399. Research in Metallurgy.

Credit hours to be arranged. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. Laboratory fee, \$8.00 per semester.

ELECTRICAL ENGINEERING

E. E. 1. Basic Electrical Engineering. (4)

Prerequisites, Math. 21 and Phys. 21 or concurrent registration. Required of sophomores in electrical engineering. Laboratory fee, \$4.00. Basic concepts of electrical potential, current power, and energy, d-c circuit analysis by the mesh-current and nodal methods, network theorems, magnetic field concepts; magnetic effects of engineering importance.

E. E. 60. Electricity and Magnetism. (3)

Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Electromagnetism as applied to electrical engineering; electric field theory with emphasis on capacitance calculations, magnetic field theory with emphasis on inductance calculations; boundary layer phenomena.

E. E. 65. Direct-Current Machinery. (3)

Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Construction, theory of operation, and performance characteristics of direct-current generators, motors, and control apparatus. Experiments on the operation and characteristics of direct-current generators and motors.

E. E. 100. Alternating-Current Circuits. (4)

Prerequisites, coverage (by courses) in Math. 20-21, Phys. 20-21, and E. E. 1. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Single—, and polyphase-circuit analysis under sinusoidal and non-sinusoidal conditions of operation. Mesh-current and nodal methods of analysis. Harmonic analysis by the Fourier series method. Theory and design of turned coupled circuits.

E. E. 101. Engineering Electronics. (4)

Prerequisite, E. E. 100. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Theory and applications of electron tubes and associated circuits with emphasis on equivalent circuit and graphical analysis of audio amplifiers, theory of feedback amplifiers.

E. E. 102. Alternating-Current Machinery. (4)

Prerequisites, E. E. 65 and E. E. 100. Required of seniors in electrical engineering. Laboratory fee, \$4.00. The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and polyphase transformers; three-phase induction generators and motors; single-phase induction motors.

E. E. 104. Communications. (3)

Prerequisites, E. E. 60 and E. E. 100. Required of juniors in electrical engineering. Long-line theory applied to audio-frequency and ultra-high-frequency systems. Elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation; elements of rectangular wave guide theory.

E. E. 108. Electric Transients. (3)

Prerequisites, E. E. 101, and Math. 64. Required of seniors in electrical engineering. Current, voltage, and power transients in lumped-parameter networks. Introduction and utilization of Laplace transformers.

E. E. 110. Transistor Circuitry. (3)

Prerequisite, E. E. 101, P-n junction theory; point contact and junction-type transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits.

E. E. 114. Applied Electronics. (3)

Three lectures a week. Prerequisite, E. E. 101. Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments.

E. E. 120. Electromagnetic Waves. (3)

Prerequisites, Math. 64 and senior standing in electrical engineering or physics. Basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission.

E. E. 130. Electronic Analog Computers. (3)

Prerequisites, E. E. 101, Math 64. Principles of electronic computers of the analog type. Analog computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators.

E. E. 131. Electronic Digital Computers. (3)

Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the digital type. Analog computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units.

For Graduates

E. E. 201. Electromagnetic Theory. (3)

Prerequisite, E. E. 120 or E. E. 215. Theoretical analysis and engineering applications of Laplace's, Poisson's, and Maxwell's equations.

E. E. 202, 203. Transients in Linear Systems. (3, 3)

Prerequisite, undergraduate major in electrical engineering, mechanical engineering, or physics. Operational circuit analysis; the Fourier integral, transient analysis of electrical and mechanical systems and vacuum tube circuits by the Laplace transformer method.

E. E. 206, 207. Microwave Engineering. (3, 3)

Prerequisite, E. E. 201 or E. E. 216. Laboratory fee, \$4.00. Basic consideration in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high frequency oscillators and tubes; radiation engineering.

E. E. 212, 213. Servomechanism. (3, 3)

Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.) The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied.

E. E. 215, 216. Radio Wave Propagation. (3, 3)

Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. E. E. 215 required of M. S. degree candidates in electrical engineering. Maxwell's wave equation; concept of retarded magnetic vector potential, propagation over plane earth; propagation over spherical earth; refraction; meteorological effects; complex antennas; air-to-air propagation; lobe modulation.

E. E. 218, 219. Signal Analysis and Noise. (3, 3)

Prerequisite, undergraduate major in electrical engineering or physics. Fourier series and integrals; phase and frequency modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise.

E. E. 230. Mathematics of Circuit Analysis. (3)

Prerequisites, undergraduate major in electrical engineering or physics. The mathematics of Circuit analysis, including determinants, matrices, complex variable, and the Fourier integral.

E. E. 231. Active Network Analysis. (3)

Prerequisite, E. E. 230. The complex frequency plane, conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquist's and Touth's criteria for stability.

E. E. 232, 233. Network Synthesis. (3, 3)

Prerequisite, E. E. 231 or equivalent. Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams; physical network characteristics, including relations existing between the real and imaginary components of network functions; modern methods of network synthesis.

E. E. 399. Electrical Engineering Research.

Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 250 are required of M. S. candidates and a minimum of eighteen semester hours is required of Ph.D. candidates. A thesis covering an approved research problem and

written in conformity with the regulations of the Graduate School is a partial requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering.

ENGLISH LANGUAGE AND LITERATURE

Eng. 1, 2. Composition and American Literature. (3, 3)

Eng. 1 is the prerequisite of Eng. 2. Grammar, rhetoric, and mechanics of writing; frequent themes. Reading will be in American literature.

Eng. 3, 4. Composition and World Literature. (3, 3)

Prerequisites, Eng. 1, 2. Eng. 3, 4, or Eng. 5, 6, or an acceptable* combination of the two required of sophomores. Practice in composition. An introduction to world literature, foreign classics being read in translation.

Eng. 5, 6. Composition and English Literature. (3, 3)

Prerequisite, Eng. 1, 2. Credit will not be given for more than six hours of work in Eng. 3, 4, and 5, 6. Practice in composition. An introduction to major English writers.

Eng. 8. College Grammar. (3)

Prerequisite, Eng. 1, 2. An analytical study of Modern English grammar, with lectures on the origin and history of inflectional and derivational forms.

Eng. 12. Introduction to Creative Writing. (3)

Prerequisite, Eng. 1, 2. Intended primarily for sophomores and juniors of demonstrated ability.

Eng. 14. Expository Writing. (3)

Prerequisite, Eng. 1, 2. Credit will not be given for Eng. 7 in addition to Eng. 14. Methods and problems of exposition; practice in several kinds of informative writing. Not offered on the College Park campus.

Eng. 101. History of the English Language. (3)

Eng. 115, 116. Shakespeare. (3, 3)

Twenty-one important plays.

Eng. 129, 130. Literature of the Romantic Period. (3, 3)

Eng. 134, 135. Literature of the Victorian Period. (3, 3)

Eng. 139, 140. The English Novel. (3, 3)

English novels of the eighteenth and nineteenth centuries.

Eng. 143. Modern Poetry. (3)

The chief British and American poets of the twentieth century.

Eng. 144. Modern Drama. (3)

The drama from Ibsen to the present.

*In practice this means one first semester course and one second semester course. Combination 3-6 or 4-5 is acceptable. 3-5 or 4-6 is not.

Eng. 145. The Modern Novel. (3)

Major novelists of the twentieth century.

Eng. 148. The Literature of American Democracy. (3)

Literature which relates closely to the democratic tradition.

Eng. 150, 151. American Literature. (3, 3)

Representative American poetry and prose from colonial times to the present, with special emphasis on the literature of the nineteenth century.

Eng. 155, 156. Major American Writers. (3, 3)

Two writers studied intensively each semester.

Eng. 157. Introduction to Folklore. (3)

Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore.

Eng. 160. Advanced Expository Writing. (3)

Theories of composition; editing; style manuals. Practice in writing essays, critical papers, reports.

Eng. 170. Creative Writing. (3)

Prerequisite, permission of the instructor.

Eng. 171. Advanced Creative Writing. (3)

Prerequisite, permission of the instructor.

GEOGRAPHY

Geog. 10. General Geography. (3)

Introduction to geography as a field of study. A survey of the content, philosophy, techniques, and application of geography and its significance for the understanding of world problems.

Geog. 20, 21. Economic Geography. (3, 3)

Cannot be taken for credit by students who have had Geog. 1 and 2. Study of the nature and geographic distribution of the world's resources, its agricultural, mineral, and other industries in relation to such basic factors as land forms, climates, population centers, and trade routes.

Geog. 40. Principles of Meteorology. (3)

An introductory study of the weather. Properties and conditions of the atmosphere and methods of measurement. The atmospheric circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications.

Geog. 41. Introductory Climatology. (3)

Prerequisite, Geog. 40, or permission of the instructor. Climatic elements and their controls, the classification and distribution of world climates, and relevance of climatic differences to human activities.

Geog. 100. Regional Geography of Eastern Anglo-America. (3)

Prerequisite, Geog. 20, 21, or Geog. 10, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of Eastern United States

and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background.

Geog. 101. Regional Geography of Western Anglo-America. (3)

Prerequisite, Geog. 20, 21, or Geog. 10, or permission of the instructor. A study of Western United States, Western Canada and Alaska along the lines mentioned under Geog. 100.

Geog. 103. Geographic Concepts and Source Materials. (3)

A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

Geog. 104. Geography of Major World Regions. (3)

A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the casual factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

Geog. 105. Geography of Maryland and Adjacent Areas. (3)

Prerequisite, permission of the instructor. An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the State of Maryland and adjacent areas.

Geog. 110. Economic and Cultural Geography of Caribbean America. (3)

An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Columbia and Venezuela.

Geog. 111. Economic and Cultural Geography of South America. (3)

A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries.

Geog. 120. Economic Geography of Europe. (3)

The natural resources of Europe in relation to agricultural and industrial development and to present-day economic and national problems.

Geog. 122. Economic Resources and Development of Africa. (3)

The natural resources of Africa in relation to agricultural and mineral production; the various stages of economic development and the potentialities of the future.

Geog. 125. Geography of Asia. (3)

Lands, climates, natural resources and major economic activities in Asia (except Soviet Asia). Outstanding differences between major regions.

Geog. 130. Economic and Political Geography of Eastern Asia. (3)

Study of China, Korea, Japan, the Philippines; physical geographic setting; population; economic and political geography. Potentialities of major regions and recent developments.

Geog. 131. Economic and Political Geography of South and Southeast Asia. (3)

Study of the Indian subcontinent, Farther India, Indonesia: physical geographic

setting; population; economic and political geography. Potentialities of various countries and regions and their role in present Asia.

Geog. 134. Cultural Geography of China and Japan. (3)

Survey of geographical distribution and interpretation of cultural patterns of China and Japan. Emphasis on basic cultural institutions, outlook on life, unique characteristics of various groups. Trends of cultural change and contemporary problems.

Geog. 140. Soviet Lands. (3)

The natural environment and its regional diversity. Geographic factors in the expansion of the Russian State. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population.

Geog. 150. History and Theory of Cartography. (3)

The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use, and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types.

Geog. 153. Problems of Cartographic Representation and Procedure. (3)

Two hours lecture and two hours laboratory a week. Study of cartographic compilation methods. Principles and problems of symbolization, classification, and representation of map data. Problems of representation of features at different scales and for different purposes. Place-name selection and lettering; stick-up and map composition.

Geog. 154. Problems of Map Evaluation. (3)

Two hours lecture and two hours laboratory a week. Schools of topographic concepts and practices. Theoretical and practical means of determining map reliability, map utility, and source materials. Nature, status, and problems of topographic mapping in different parts of the world. Non-topographic special use maps. Criteria of usefulness for purposes concerned and of reliability.

Geog. 155. Problems and Practices of Photo Interpretation. (3)

Interpretation of aerial photographs with emphasis on the recognition of landforms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation.

Geog. 160. Advanced Economic Geography I. Agricultural Resources. (3)

Prerequisite, Geog. 10, or 20, 21, or permission of instructor. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to the physical environment and economic geographic conditions. Main problems of conservation.

Geog. 161. Advanced Geography II. Mineral Resources. (3)

Prerequisite, Geog. 10, or 20, 21, or permission of instructor. The nature and geographic distribution of the principal power, metallic, and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation.

Geog. 190. Political Geography. (3)

Geographical factors in national power and international relations; an analysis of the role of "Geopolitics" and "Geostrategy," with special reference to the current world scene.

GOVERNMENT AND POLITICS

G. & P. 1. *American Government.* (3)

This course is designed as the basic course in government for the American Civilization program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

G. & P. 3. *Principles of Government and Politics.* (3)

A study of the basic principles and concepts of political science.

G. & P. 97. *Major Foreign Governments.* (3)

Prerequisite, G. & P. 1. An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in G. & P. 7, 8, or 10.

G. & P. 101. *International Political Relations.* (3)

Prerequisite, G. & P. 1. A study of the major factors underlying international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.

G. & P. 102. *International Law.* (3)

Prerequisite, G. & P. 1. Fundamental principles governing the relations of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.

G. & P. 104. *Inter-American Relations.* (3)

Prerequisite, G. & P. 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

G. & P. 105. *Recent Far Eastern Politics.* (3)

Prerequisite, G. & P. 1. The background and interpretation of recent political events in the Far East and their influence on world politics.

G. & P. 106. *American Foreign Relations.* (3)

Prerequisite, G. & P. 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

G. & P. 108. *International Organization.* (3)

Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.

G. & P. 110. *Principles of Public Administration.* (3)

Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles or organization and management and to fiscal, personnel, planning, and public relations practices.

G. & P. 111. *Public Personnel Administration.* (3)

Prerequisite, G. & P. 110 or B. A. 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations and retirement.

G. & P. 124. *Legislatures and Legislation.* (3)

Prerequisite, G. & P. 1. A comprehensive study of legislative organization, procedure, and problems.

G. & P. 131, 132. *Constitutional Law.* (3, 3)

Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

G. & P. 133. *Administration of Justice.* (3)

Prerequisite, G. & P. 1. An examination of civil and criminal court structure and procedures in the United States at all levels of government, with special emphasis upon the federal judiciary.

G. & P. 197. *Comparative Governmental Institutions.* (3)

Prerequisite, G. & P. 1. A study of major political institutions, such as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

For Graduates

G. & P. 201. *Seminar in International Political Organization.* (3)

A study of the forms and functions of various international organizations.

G. & P. 202. *Seminar in International Law.* (3)

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

G. & P. 205. *Seminar in American Political Institutions.* (3)

Reports on topics assigned for individual study and reading in the background and development of American government.

G. & P. 206. *Seminar in American Foreign Relations.* (3)

Reports of selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

G. & P. 207. *Seminar in Comparative Governmental Institutions.* (3)

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

G. & P. 211. *Seminar in Federal-State Relations.* (3)

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

G. & P. 213. *Problems of Public Administration.* (3)

Reports on topics assigned for individual study and reading in the field of public administration.

G. & P. 214. *Problems of Public Personnel Administration.* (3)

Reports on topics assigned for individual study in the field of public personnel administration.

G. & P. 221. *Seminar in Public Opinion.* (3)

Reports on topics assigned for individual study and reading in the field of public opinion.

G. & P. 223. *Seminar in Legislatures and Legislation.* (3)

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

G. & P. 224. *Seminar in Political Parties and Politics.* (3)

Reports on topics assigned for individual study and reading in the fields of political organization and action.

G. & P. 225. *Man and the State.* (3)

Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.

G. & P. 231. *Seminar in Public Law.* (3)

Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.

G. & P. 251. *Bibliography of Government and Politics.* (3)

Survey of the literature of the various fields of government and politics and instruction in the use of government documents.

G. & P. 261. *Problems of Government and Politics.* (3)

Credit according to work accomplished.

G. & P. 399. *Thesis Research.*

(Arranged).

HEALTH

In addition to the Health courses listed below consult the College of Physical Education, Recreation and Health catalog for graduate level courses in the Health field.

Hea. 80. *The Driver, His Characteristics and Improvement.* (3)

Prerequisites, Hea. 50, 70. The aim of this study is to treat the driver-behavior problem in its relation to many of the psycho-physical factors and forces in the traffic environment that impinge upon the man behind the wheel.

*For Advanced Undergraduates and Graduates**

Hea. 120. *Methods and Materials in Health Education.* (3)

Prerequisites, Hea. 40 or equivalent. This course considers various plans of teaching health in schools. Health education teaching methods and materials are evaluated with regard to their application to practical situations.

Hea. 145. *Advanced Driver Education.* (3)

Prerequisites, Hea. 50, 70, 80, 105. Progressive techniques and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies;

program planning in driver-education; consumer education; resources and agencies; the teacher and driver education; measuring and evaluating results, driver-education for adults; new developments in driver-education; insurance and liability, and the future of driver-education.

Hea. 160. Problems in School Health Education in Elementary and Secondary Schools. (2-6)

This is a workshop type of course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

Hea. 170. The Health Program in the Elementary School. (3)

Prerequisites, Hea. 2 and 4 or Hea. 40. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education.

The total school health program is surveyed from the standpoint of organization and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

**Hea. 178. Fundamentals of Sex Education. (3)*

This course is concerned with basic information regarding the physical, psychological, social, historical, and comparative cultural aspects of sex. The adjustment needs and problems of children and adults during the course of maturing and aging are studied, and special consideration is given to the sex education program in schools.

Hea. 189. Field Laboratory Projects and Workshops. (1-6)

A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P.E. Rec., Hea., or Ed. 189 is six.

**Hea. 190. Administration and Supervision of School Health Education. (3)*

The application of the principles of administration and supervision to school health education. This course involves observation and field work in school and community health programs.

For Graduates

Hea. 201. Foundations in Physical Education, Recreation, and Health. (3)

A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

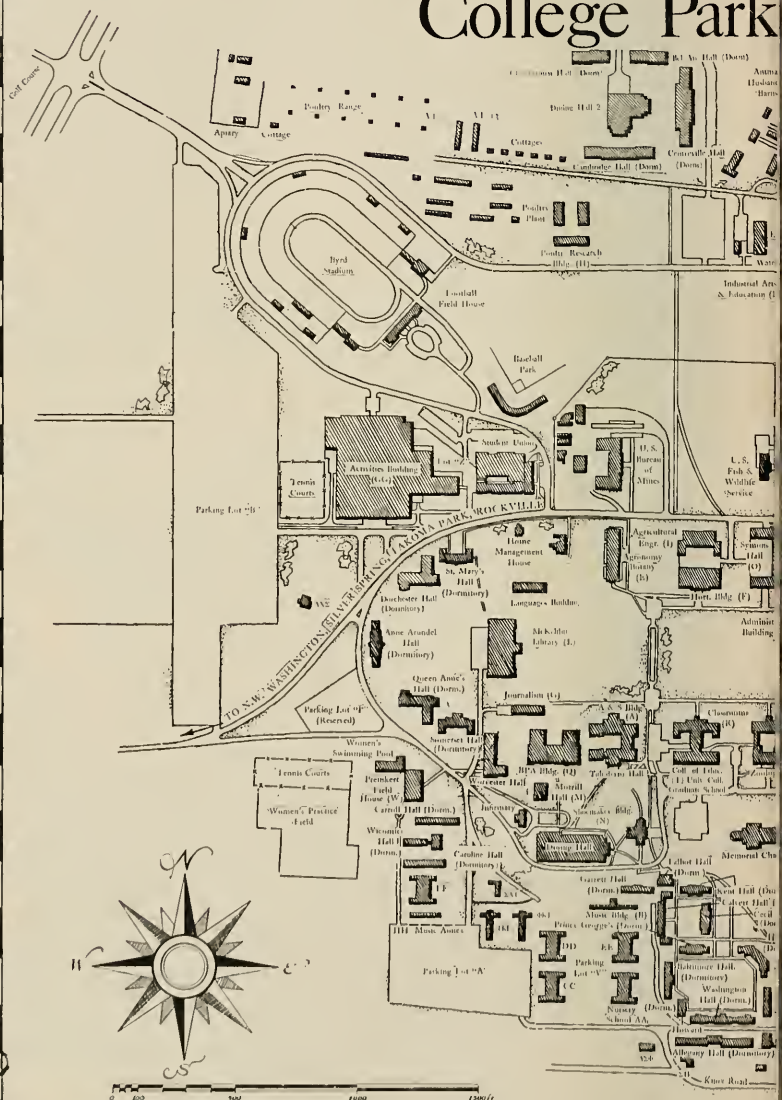
*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



COMMENCEMENT IN EUROPE

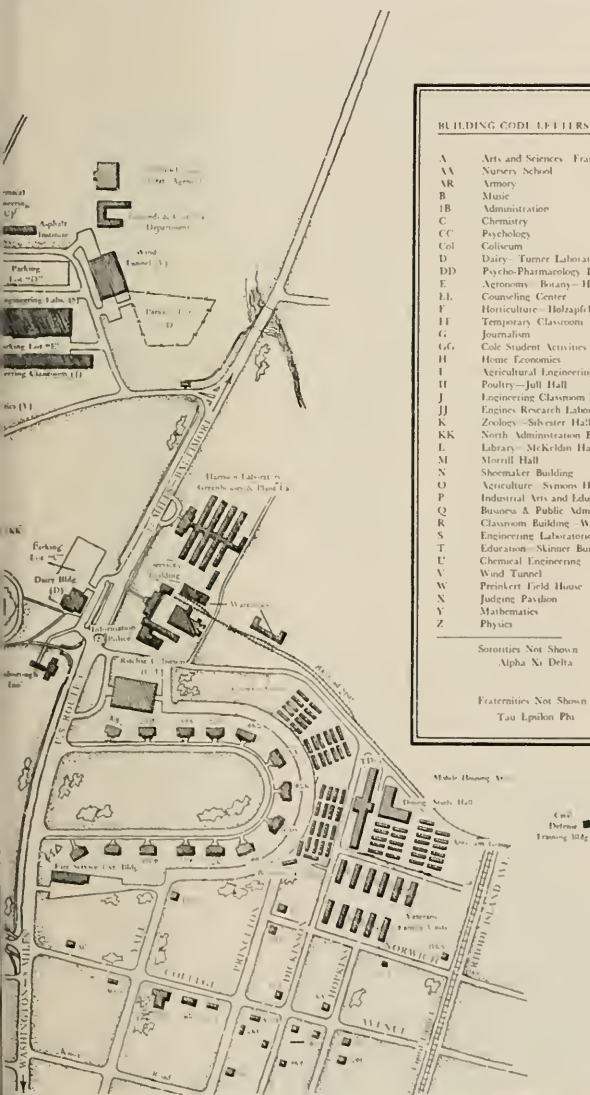
Secretary of Army Elvis J. Starr addresses the class of 1961 in Heidelberg University's Neue Aula. Some 140 European Division students received bachelor degrees.

UNIVERSITY OF College Park



MARYLAND

campus



BUILDING CODE LETTERS FOR CLASS SCHEDULES

A	Arts and Sciences	Francis Scott Key Hall
AA	Nursery School	Taliaferro Hall
AR	Armory	
B	Music	
IB	Administration	
C	Chemistry	
CC	Psychology	
Col	Coliseum	
D	Dairy	Turner Laboratory
DD	Psycho-Pharmacology Laboratory	
E	Agroonomy	Botany—H. J. Patterson Hall
EL	Counseling Center	
F	Horticulture—Holzapfel Hall	
IT	Temporary Classroom	
G	Journalism	
AG	College Student Activities Building	
H	Home Economics	
I	Agricultural Engineering—Shriver Laboratory	
II	Poultry	Jull Hall
J	Engineering Classroom Building	
JJ	Engine Research Laboratories	Molecular Physics
K	Zoology—Shevett Hall	
KK	North Administration Building	
L	Library—McKeldin Hall	
M	Morrill Hall	
N	Shoemaker Building	
O	Agriculture	Simons Hall
P	Industrial Arts and Education	J. M. Patterson Bldg.
Q	Business & Public Administration	
R	Classroom Building	Woods Hall
S	Engineering Laboratories	
T	Education—Skinner Building	
U	Chemical Engineering	
V	Wind Tunnel	
W	Prentice Field House	
X	Judging Pavilion	
Y	Mathematics	
Z	Physics	

Sororities Not Shown
Alpha Xi Delta

Fraternities Not Shown
Tau Epsilon Phi



COMMENCEMENT IN THE FAR EAST

University of Maryland President Wilson H. Elkins confers the honorary doctorate of laws on Kotaro Tanaka, Chief Justice of the Supreme Court of Japan, during Spring Commencement ceremonies in Tokyo, March 1960. Justice Tanaka has since taken a seat on the bench of the World Court. The Far East Class of 1960 numbered 62 and an equal number graduated in the

Hea. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)

A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

Hea. 210. Methods and Techniques of Research. (3)

A study of methods and techniques of research used in Physical Education, Recreation and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

Hea. 220. Scientific Foundations of Health Education. (3)

A course dealing with an analysis of hereditary, physical, mental, and social factors which influence the total health status during the developmental process. The role of education in fostering physical and mental health is studied.

Hea. 230. Source Material Survey. (3)

A library survey course, covering the total areas of Physical Education, Recreation and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

Hea. 240. Modern Theories of Health. (3)

The purpose of this course is to familiarize advanced students in health education with modern theories of health and disease which involve so-called mind-body relationships. Major topics of study and analysis include the theories of psychosomatics, stress, hypnosis and constitutional psychology.

Hea. 250. Health Problems in Guidance. (3)

A course designed to familiarize guidance counselors with principles of health and with common deviations from health, especially during the school years. Implications of health for pupil effectiveness in the entire curriculum, including extra-class activities, are dealt with. Special attention is given to psychosomatic disturbances which are commonly an aspect of personal problem situations. Methods of dealing with health problems and utilizing available resources of school and community are discussed.

Hea. 260. Public Health Education. (3)

A course designed to acquaint the student with the structure, functions and major problems in public health; and with the role of education in public health.

Hea. 280. The Scientific Bases of Exercise. (3)

Prerequisites, Anatomy, Physiology, P. E. 100, P. E. 160, or the equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

Hea. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)

Master or Doctoral candidates who desire to pursue special problems under the direction of their advisors may register for 1-6 hours of credit under this number.

Hea. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-

job administrative problems and contribute to the solution of other class members' problems.

Hea. 291. Curriculum Construction in Physical Education and Health. (3)
A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

HISTORY

H. 5, 6. History of American Civilization. (3, 3)
Required for graduation of all students who enter the University after 1944-45. Normally to be taken in the sophomore year.

H. 41, 42. Western Civilization. (3, 3)
These courses are designed to give the student an appreciation of the civilization in which he lives in its broadest setting. The study begins with the collapse of classical civilization and comes to the present.

H. 53, 54. History of England and Great Britain. (3, 3)
A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors and pre-law students. First semester: to 1485. Second semester: since 1485.

H. 61, 62. Far Eastern Civilization. (3, 3)
These courses seek to give the student an understanding of a great civilization radically different from our own and an appreciation of the complex problems of the Far East and of American policy there. The approach is interdisciplinary within an historical framework.

H. 101. American Colonial History. (3)
Prerequisites, H. 5, 6, or the equivalent. The settlement and development of colonial America to the middle of the eighteenth century.

H. 102. The American Revolution. (3)
Prerequisites, H. 5, 6, or the equivalent. The background and course of the American Revolution through the formation of the Constitution.

H. 105. Social and Economic History of the United States to 1865. (3)
Prerequisites, H. 5, 6, or the equivalent. A synthesis of American life from Independence through the Civil War.

H. 106. Social and Economic History of the United States since the Civil War. (3)
Prerequisites, H. 5, 6, or the equivalent. The development of American life and institutions, with emphasis upon the period since 1876.

H. 116. The Civil War. (3)
Prerequisites, H. 5, 6, or the equivalent. Military aspects; problems of the Confederacy, political, social, and economic effects of the war upon American society.

H. 118, 119. Recent American History. (3)
Prerequisites, H. 5, 6, or the equivalent. Party politics, domestic issues, foreign rela-

tions of the United States since 1890. First semester: through World War 1. Second semester: since World War 1.

H. 127, 128. Diplomatic History of the United States. (3)

Prerequisites, H. 5, 6, or the equivalent. A historical study of the diplomatic negotiations and foreign relations of the United States. First semester: from the Revolution to the Civil War. Second semester: from the Civil War to the present.

H. 129. The United States and World Affairs. (3)

Prerequisites, H. 5, 6, or the equivalent. A consideration of the changed position of the United States with reference to the rest of the world since 1917.

H. 133, 134. The History of Ideas in America. (3, 3)

Prerequisites, H. 5, 6, or the equivalent. An intellectual history of the American people, embracing such topics as liberty, democracy, and social ideas.

H. 141, 142. History of Maryland. (3, 3)

Prerequisites, H. 5, 6, or the equivalent. First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union.

H. 145, 146. Latin-American History. (3, 3)

Prerequisites, H. 5 and 6 or H. 41 and 42, or equivalent. A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester: Colonial Latin America. Second semester: the Republics.

H. 155. Medieval Civilization. (3)

Prerequisites, H. 41, 42, or H. 53, 54, or equivalent. A survey of the history of Medieval life, culture, and institutions from the fall of the Roman Empire to the thirteenth century.

H. 161. The Renaissance and Reformation. (3)

Prerequisites, H. 41, 42 or 53, or the permission of the instructor. The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years War.

H. 163, 164. History of the British Empire. (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783); second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire.

H. 167, 168. History of Russia. (3, 3)

Prerequisites, H. 41, 42, or the equivalent. A history of Russia from the Slavic invasions to the present.

H. 169, 170. Europe in the Nineteenth Century, 1815-1919. (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. A study of the political, economic, social and cultural development of Europe from the Congress of Vienna to the First World War.

H. 171, 172. Europe in the World Setting of the Twentieth Century. (3, 3)

Prerequisites, H. 41, 42, or 53, 54. A study of political, economic, and cultural

developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance.

H. 173. The Soviet Union. (3)

Prerequisites, H. 167, 168. A history of the Bolshevik Revolution and the founding of the Soviet Union: the economic policy and foreign policy of the USSR to the present.

HOME ECONOMICS

The College of Home Economics offers the following courses on the College Park and Baltimore Campuses.

FOOD

Foods 52, 53. Science of Food Preparation. (3, 3)

One lecture and two laboratory periods a week. Prerequisites, Chem. 31, 32, 33, 34 to precede or parallel. Composition and structure of food with study of the fundamental principles involved in food preparation. Lab. fee — \$10.00.

Foods 104. Advanced Foods. (2-3)

Prerequisites, Foods 52, 53; Chem. 31, 32, 33, 34. The physical and chemical behavior of the basic food constituents in food preparation and processing; study of recent advances in these fields. Lab. fee — \$3.00.

NUTRITION

Nut. 10. Elements of Nutrition. (3)

For students in other colleges and for majors in crafts, practical art, textiles and clothing. Lab. fee — \$3.00.

Nut. 114. Nutrition for Health Services. (3)

Nut. 10 or equivalent. A study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds. For graduate nurses, dietitians, health teachers, and social workers. Lab. fee — \$3.00.

Nut. 120. Advanced Nutrition. (3)

Prerequisites, Foods 53; Zool. 1; Biochem. 81, 82 or concurrent. The progress of nutrition as found in the results of current research, with emphasis on interpretation and application. Lab. fee — \$3.00.

TEXTILES AND CLOTHING

Tex. 1. Textiles. (3)

Two lectures and one laboratory period a week. Basic introduction to textile field. Study of textile fibers; evaluation of labeling on textiles; analysis and care of fabrics. Lab. fee — \$3.00.

Tex. 105. Consumer Problems in Textiles. (3)

Three lectures a week. Prerequisite, Tex. 1 or equivalent. Study of textiles from

the consumer point of view for personal, household and institutional use. Evaluation of such textiles through analysis of comparison shopping, laboratory tests, survey of literature and field trips. Lab. fee — \$3.00.

Clo. 20. Clothing Construction. (3)

Three laboratory periods a week. Prerequisite, Tex. 1 for home economics students. Interpretation and use of commercial patterns; fabric study; basic fitting and construction techniques. Lab. fee — \$3.00.

Clo. 21. Pattern Design. (3)

Three two-hour laboratory periods a week. Prerequisite, Clo. 20 and/or consent of department. Pattern study, figure analysis and pattern alteration, development and adaptation of individual basic pattern, creation of original designs. Lab. fee—\$3.00.

Clo. 120. Draping. (3)

Three laboratory periods a week. Prerequisites, Clo. 21, Clo. 122. Demonstrations and practice in creating costumes in fabrics on individual dress forms; modeling of garments for class criticism. Lab. fee—\$3.00.

Clo. 127. Apparel Design. (3)

One lecture and two laboratory periods a week. Prerequisite, Clo. 120. The art of costuming; trade and custom methods of clothing design and construction; advanced work in draping, pattern design and/or tailoring, with study of the interrelationship of these techniques. Lab fee—\$3.00.

Clo. 128. Home Furnishings. (3)

Three laboratory periods a week. Prerequisites, Tex. 1, Clo. 20, or consent of instructor. Selection of fabrics for home or institutional furnishings; care and repair of such furnishings; custom construction of slip covers, draperies, bedspreads; refinishing and upholstering a chair. Lab. fee—\$3.00.

HOME ECONOMICS

H. E. 190. Special Problems in Home Economics. (1-3)

Junior, senior, or graduate standing and consent of instructor. Problem may be in any area of home economics and will carry the name of the subject matter of the problem. Lab. fee — \$3.00.

For Graduates

H. E. 201. Methods of Research in Home Economics. (3)

Prerequisites, Statistics or Tests and Measurements. (Ed. 151, Soc. 183, Agr. 100, or equivalent.) Application of scientific methods to problems in the field of home economics with emphasis on needed research of an inter-disciplinary nature.

H. E. 202. Integrative Aspects of Home Economics. (2)

Prerequisite, consent of instructor. Scope and focus of total professional field with emphasis on purposes and functions as related to family and other group living. Impact of the changing social, economics, technological and educational situation upon home economics.

JOURNALISM AND PUBLIC RELATIONS

Jour. 165. Feature Writing. (3)

Writing and selling of magazine and newspaper feature articles.

P. R. 166. Public Relations. (3)

Survey of public relations; general orientation, principles and techniques.

P. R. 170. Publicity Techniques. (3)

Strategy and techniques of publicity. Orientation and practice in the use of major media of public communication.

P. R. 186. Public Relations of Government. (3)

Study of public relations, publicity, propaganda, information services in public administration.

LANGUAGES AND LITERATURE, FOREIGN

A student who offers two units of a foreign language from high school will not receive credit in college for the first semester of the introductory course in that language. Exceptions will be made in cases where a period of at least four years has elapsed between the date of graduation from high school and the actual date of enrollment in a specific language course. Special approval in specific cases will not be required.

ARABIC

Arabic 1, 2. Modern Arabic. (3, 3)

First and second semesters. Three recitations a week. Elements of pronunciation, script, colloquial conversation and translation.

CHINESE

Chinese 1, 2. Elementary Chinese. (3, 3)

Elements of pronunciation, simple ideograms, colloquial conversation, translation.

Chinese 4, 5. Intermediate Chinese. (3, 3)

Prerequisite, Chinese 1 and 2 or equivalent. Reading in texts designed to give some knowledge of Chinese life, thought, and culture.

Chinese 161, 162. Chinese Civilization. (3, 3)

This course supplements Geog. 134 and 135, *Cultural Geography of East Asia*. It deals with Chinese literature, art, folk lore, history, government, and great men. Second semester: developments in China since 1911. The course is given in English translation.

FRENCH

French 1, 2. Elementary French. (3, 3)

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

Languages and Literature, Foreign, Mathematics

French 4, 5. Intermediate Literary French. (3, 3)

Prerequisite, French 1 and 2 or equivalent. Reading of texts designed to give some knowledge of French life, thought, and culture.

French 8, 9. Intermediate Conversation. (3, 3)

An elective course in conversation which can be taken after completion of French 5.

GERMAN

German 1, 2. Elementary German. (3, 3)

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

German 4, 5. Intermediate Literary German. (3, 3)

Prerequisite, German 1, 2, or equivalent. Reading of narrative prose designed to give some knowledge of German life, thought and culture.

German 8, 9. Intermediate Conversation. (3, 3)

An elective course in conversation which can be taken after completion of German 5.

RUSSIAN

Russian 1, 2. Elementary Russian. (3, 3)

Elements of grammar; pronunciation and conversation; exercises in translation.

Russian 3. Elementary Conversation. (1)

Russian 4, 5. Intermediate Russian. (3, 3)

Prerequisite, Russian 1 and 2, or equivalent. Reading of texts designed to give some knowledge of Russian life, thought and culture.

Russian 8. Intermediate Conversation. (2)

An elective course in conversation which can be taken after completion of Russian 5.

SPANISH

Spanish 1, 2. Elementary Spanish. (3, 3)

Elements of grammar and exercises in translation. Pronunciation and conversation.

Spanish 4, 5. Intermediate Spanish. (3, 3)

Prerequisite, Spanish 1, 2, or equivalent. Reading of texts designed to give some knowledge of Spanish and Latin-American life, thought and culture.

Spanish 8, 9. Intermediate Conversation. (3, 3)

An elective course in conversation which can be taken after completion of Spanish 5.

MATHEMATICS

In general students should enroll in only one of the course sequences, Math. 5, 10-11, 18-19. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 5, 10, 18. Credit in only one course, the one enrolled in latest.

Math. 11, 18. Math. 11—2 credits Math. 18—5 credits.

Math. 5. Business Algebra. (3)

Prerequisite, one unit of algebra. Open only to students in the College of Business and Public Administration, the College of Agriculture, College of Special and Continuation Studies, and the Department of Industrial Education. Note regulation above in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, fractions, ratio and proportion, linear equations, exponents, logarithms, percentage, trade discount, simple interest, bank discount, true discount, and promissory notes.

Math. 6. Mathematics of Finance. (3)

Prerequisite, Math. 5 or equivalent. Required of students in the College of Business and Public Administration, and open to students in the College of Arts and Sciences only for elective credit. Line diagrams, compound interest, simple interest, ordinary annuities, general annuities, deferred annuities, annuities due, perpetuities, evaluation of bonds, amortization, and sinking funds.

Math. 10. Algebra. (3)

Prerequisite, one unit each of algebra and plane geometry. Open to biological, pre-medical, predental, College of Special and Continuation Studies, and general Arts and Sciences students. Note regulation above, in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability and mathematics of investment.

Math. 11. Trigonometry and Analytic Geometry. (3)

Prerequisite, Math. 10 or equivalent. Open to biological, premedical, predental, University College and general Arts and Sciences students. This course is not recommended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19. Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, locus problems, the straight line and circle, conic sections, and graphs.

Math. 13. Elements of Mathematical Statistics. (3)

Prerequisite, Math 10 or equivalent. Frequency distributions, averages, moments, measures of dispersion, the normal curve, curve fitting, regression and correlation.

Math. 18, 19. Elementary Mathematical Analysis. (5, 5)

Prerequisites, high school algebra completed and plane geometry. Open to students in the sciences, engineering, education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 5, 10-11, 18-19. The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus and a full discussion of solid analytic geometry are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, and matrices.

Math. 20, 21. Calculus. (4, 4)

Three lectures and two one-hour drill periods a week. Prerequisite, Math. 19 or equivalent. Open to students in engineering, education, and the physical sciences. Limits, derivatives, differentials, maxima and minima, curve sketching, rates, curvature,

kinematics, integration with geometric and physical applications, partial derivatives, space geometry, multiple integrals, infinite series.

Math. 64. Differential Equations for Engineers. (3)

Prerequisite Math 21 or equivalent. Required of students in mechanical and electrical engineering. Differential equations of the first and second order with emphasis on their engineering applications.

For Advanced Undergraduates and Graduates

Math. 100. Vectors and Matrices. (3)

Prerequisite, Math. 21 or equivalent. The algebra of vector spaces and matrices, with emphasis upon those aspects of interest to students in applied mathematics.

Math. 110, 111. Advanced Calculus. (4, 4)

Prerequisite, Math. 21, or equivalent. Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis and of complex variable theory. Emphasis on problems and techniques.

Math. 114. Differential Equations. (3)

Prerequisite, Math. 110 or equivalent. Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory.

Math. 115. Partial Differential Equations. (3)

Prerequisite, Math. 114. Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications.

Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis. (3, 3)

Prerequisite, Math. 21 or equivalent. The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity and relativity.

Math. 130. Probability. (3)

Prerequisite, Math. 21 or equivalent. Combinatory analysis, total, compound and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors.

Math. 132. Mathematical Statistics. (3)

Prerequisite, Math. 21 or equivalent. Frequency distributions and their parameters, multivariate analysis and correlation, theory of sampling, analysis of variance, statistical inference.

Math. 152. Applied Mathematics I (Vector Analysis). (3)

Prerequisite, Math. 21 or equivalent. Algebra and calculus of vectors and applications.

Math. 153. Applied Mathematics II (Complex Variable). (3)

Prerequisite, Math. 21 or equivalent. Open to students in engineering and the physical sciences. Graduate students in mathematics should enroll in Math. 286. Fundamental operations in complex numbers, differentiation and integration, sequences and series, power series, analytic functions, conforming mapping, residue theory, special functions.

Math. 154. Applied Mathematics III (Operational Calculus). (3)

Prerequisite, Math. 21 or equivalent. Operational solutions of ordinary and partial differential equations, Fourier and Laplace transforms.

Math. 155. Applied Mathematics IV (Numerical Analysis). (3)

Prerequisite, Math. 110 and 114, or consent of instructor. A brief survey of computing machines, study of errors involved in numerical computations, the use of desk machines. and tables, numerical solutions of polynomial and transcendental equations, interpolation, numerical differentiation and integration, ordinary differential equations, systems of linear equations.

MICROBIOLOGY

Microb. 1. General Microbiology. (4)

Two lecture and two two-hour laboratory periods a week. The physiology, culture and differentiation of bacteria. Fundamental principles of microbiology in relation to man and his environment. Laboratory fee, \$11.00.

Microb. 101. Pathogenic Microbiology. (4)

Two lectures and two laboratory periods a week. The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of bacterial species, types of diseases, modes of disease transmission; prophylactic, therapeutic and epidemiological aspects. Laboratory fee, \$11.00.

Microb. 108. Epidemiology and Public Health. (2)

Two lecture periods a week. Prerequisite, Microb. 1. History, characteristic features, and epidemiology of the important communicable diseases; public health aspects of man's struggle for existence; public health administration and responsibilities; vital statistics.

Microb. 202. Genetics of Microorganisms. (2)

Two lecture periods a week. Prerequisite, consent of instructor. An introduction to genetic principles and methodology applicable to microorganisms.

Microb. 206, 208. Special Topics. (1-4, 1-4)

Prerequisite, 20 credits in microbiology. Presentation and discussion of fundamental problems and special subjects in the field of microbiology.

Microb. 210. Virology and Tissue Culture. (2)

Two lecture periods a week. Prerequisite, Microb. 101 or equivalent. Characteristics and general properties of viruses and rickettsiae. The principles of tissue culture.

Microb. 211. Virology and Tissue Culture Laboratory. (2)

Two three-hour laboratory periods a week. Prerequisite, Microb. 101 or equivalent. Registration only upon consent of instructor. Laboratory methods in virology and tissue culture. Laboratory fee, \$20.00.

MILITARY STUDIES

M. S. 147, 148. Military History. (3, 3)

A study of the evolution of the art of war to include the following:

- (1) the impact of technological advances on the conduct of war;
- (2) the development of the principles of strategy and higher tactics;

- (3) the interrelationship of land, sea, and air power and the organization and functioning of high commands in combined operations;
(4) the attributes of the great military leaders and their contribution to the advancement of the art of war

M. S. 147, up to World War I; M. S. 148, World Wars I and II and the Korean Conflict.

M. S. 149. Military Law. (3)

A study of the basic principles of elementary law, including aspects of torts, property, commercial law, and judicial systems; the aspects of constitutional law affecting military government and the exercise of military power; the law of evidence applied in civil, criminal, and military trials; a survey of the substantive criminal law.

M. S. 151. Military Logistics. (3)

A study of logistics, including (a) the principles governing the national economic activities and resources necessary to support the Armed Forces; (b) a study of the logistical systems of the Army, Navy, and Air Force.

M. S. 152. Military Leadership. (3)

A study of the principles and attributes of good military leadership.

M. S. 153. Military Policy of the United States. (3)

A study of our military history and our military concepts and policies, and their effects upon national objectives and national policies. A continuing analysis of all the factors which influence national policies, particularly military policy; an evaluation of the lessons to be learned from this historical study.

MUSIC

Music 7, 8. Theory of Music. (3, 3)

Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of "C" in Music 8 in order to register for Music 17 and 70.

Music 16. Music Fundamentals for the Classroom Teacher. (3)

Open to students majoring in Elementary Education or Childhood Education; other students take Music 7. Music 7 and 16 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning.

Music 20. Survey of Music Literature. (3)

This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today.

NURSING

Nurs. 9. Nursing in Child Health. (2)

This course is designed to help the student gain an understanding and appreciation of the health needs of the child in relation to his physical, mental, emotional, and social development.

Nursing, Philosophy

Nurs. 108. *Applied Psychology*. (2)

This educational experience is designed to supplement and implement nurses' basic knowledge of psychology and sociology. Through lectures, discussions, and observations focused on patient and nurse behavior, nurses can become more aware of the importance of, and can be helped to develop, positive nurse-patient relationships.

Nurs. 153. *Public Health*. (2)

Knowledge and understanding of public health; its history and functions in the community and in the world in general.

Nurs. 154. *Principles in Management in a Nursing Unit*. (2)

This course considers the elementary principles of administration; and the interrelationships of the various departments of a health agency. It deals with the position of the supervisor, staff nurse and other members of the nursing team. Methods of supervision and evaluation of clinical work are included.

Nurs. 156. *Public Health Nursing I*. (2)

The development and current trends of public health nursing are considered in this course. Principles, objectives and methods of public health nursing are incorporated.

Nurs. 157. *Public Health Nursing*. (4)

Designed to assist students in the application of knowledge and skills in caring for patients and their families in the community. Eight weeks clinical experience is offered through the facilities of the state health department to graduate nurse students.

Nurs. 158. *Bio-statistics*. (3)

Purpose is to orient the student in the proper interpretation of observational data, and to evaluate quantitative aspects of medical literature.

Nurs. 159. *Clinical Practicum*. (2)

Course provides opportunity for the registered nurse to gain additional knowledge, understanding, and skills in the nursing care of selected patients. (Area of nursing practice will be determined by the student's needs.)

Nurs. 189. *Workshops and Institutes*. (1-6)

Course provides opportunity for the registered nurse to participate in Workshops and Institutes in various aspects of nursing, such as, Cardiovascular Nursing, Nursing Supervision and Clinical Teaching, Rehabilitative Nursing, and others.

Nurs. 199. *Pro-seminar*. (2)

Integration of scope and trends in nursing as compared with theoretical and practical applications. (For graduate nurse students).

Nurs. 201. *Trends of Higher Education in Nursing*. (2)

One lecture or two hour conferences a week.

PHILOSOPHY

Phil. 1. *Philosophy for Modern Man*. (3)

Modern man's quest for understanding of himself and his world, with particular reference to American ideas and ideals.

Phil. 41. *Elementary Logic and Semantics*. (3)

An introductory study of logic and language, intended to help the student increase

his ability to employ language with understanding and to reason correctly. Topics treated include: the uses and abuses of language, techniques for making sound inferences, and the logic of science.

Phil. 120. Oriental Philosophy. (3)

A brief survey of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist Philosophers and the chief Hindu systems. Discussion of Chinese thought will center about Confucius, Laotse and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen.

Phil. 123, 124. Philosophies Men Live By. (3, 3)

An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man.

Phil. 125. The Great Philosophers. (3)

A discussion of the ideas of the great Western philosophers, based on readings in their works.

Phil. 130. The Conflict of Ideals in Western Civilization. (3)

A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the United States and Russia.

PHYSICAL EDUCATION

For Advanced Undergraduates

P. E. 120. Physical Education for the Elementary School. (3)

This course is designed to orient the general elementary school classroom teacher to physical education. Principles and practices in elementary school physical education are presented and discussed, and a large variety of appropriate activities are considered and demonstrated from a standpoint of their use and application at the various grade levels.

P. E. 130. Fundamentals of Body Dynamics. (3)

This course is designed to acquaint the elementary teacher with the scientific principles applied to fundamental motor skills, posture and body mechanics as they relate to physical growth and development.

**P. E. 155. Physical Fitness of the Individual. (3)*

A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is also open to persons outside the fields of physical education and health.

**P. E. 160. Theory of Exercise. (3)*

Two lectures and one laboratory hour a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or equivalent. A study of exercise and its physiological and kine-

*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

siological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

**P. E. 180. Measurement in Physical Education and Health. (3)*

Two lectures and two laboratory periods a week. First and second semesters and summer. Prerequisite, placement in Group 1 or 2 on Mathematics Entrance test or Math. 0. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

**P. E. 190. Administration and Supervision of Physical Education, Recreation and Health. (3)*

The application of the principles of administration and supervision to Physical Education, Recreation, and Health. This course must be taken during the semester in which the student is doing student teaching.

**P. E. 191. The Curriculum in Elementary School Physical Education. (3)*

Prerequisite, P. E. 120. Curriculum planning and construction is considered from a standpoint of valid criteria for the selection of content in elementary school physical education. Desirable features of cooperative curriculum planning in providing for learning experiences will be presented and discussed.

P. E. 195. Organization and Administration of Elementary School Physical Education. (3)

Prerequisite, P. E. 120. This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

P. E. 196. Quantitative Methods. (3)

A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation, and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

For Graduates

P. E. 200. Seminar in Physical Education, Recreation, and Health. (1)

P. E. 201. Foundations in Physical Education, Recreation, and Health. (3)

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

*Note: Starred courses may be taken for graduate credit with permission of the advisor. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

P. E. 203. *Supervisory Techniques in Physical Education, Recreation and Health.* (3)

A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

P. E. 204. *Physical Education and the Development of the Child.* (3)

An analysis of the place of physical education in meeting the growth and developmental needs of children of elementary school age.

P. E. 205. *Analysis of Contemporary Athletics.* (3)

A study of current problems, practices, and national issues of paramount importance to the conduct of athletic competition in a democracy.

P. E. 210. *Methods and Techniques of Research.* (3)

A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

P. E. 215. *Principles and Techniques of Evaluation.* (3)

Prerequisite, an introductory course in measurement or permission of the instructor. A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical education in schools and colleges.

P. E. 230. *Source Material Survey.* (3)

A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

P. E. 250. *Mental and Emotional Aspects of Sports and Recreation.* (3)

Prerequisites, Psych. 1, or H. D. Ed. 100, 101, or equivalents. An exploration of psychological aspects of physical education, athletic sports and recreation. Applications of psychology are made to teaching and learning, coaching, athletic efficiency (motivation, emotional upset, staleness, etc.), and the problem of interpreting physical education and recreation experiences. Means of studying problems of these kinds are evaluated.

P. E. 280. *Scientific Bases of Exercise.* (3)

Prerequisites, Anatomy, Physiology, P. E. 100, 160, or equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

P. E. 288. *Special Problems in Physical Education, Recreation, and Health.* (1-6)

Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisors may register for 1-6 hours of credit under this number.

P. E. 290. *Administrative Direction of Physical Education, Recreation, and Health.* (3)

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

P. E. 291. *Curriculum Construction in Physical Education and Health.* (3)
A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

PHYSICS

Phys. 1. *Elements of Physics: Mechanics, Heat, and Sound.* (3)

Two lectures, and one recitation a week. The first half of a survey course in general physics. This course is for the general student and does not satisfy the requirement of the professional schools. Successful passing prerequisite of the qualifying examination is elementary mathematics. Lecture demonstration fee, \$3.00.

Phys. 2. *Elements of Physics: Magnetism, Electricity, and Optics.* (3)

The second half of a survey course in general physics. This course is for the general student and does not satisfy the requirements of the professional schools. Prerequisite, Phys. 1. Lecture demonstration fee, \$3.00.

Phys. 102. *Optics.* (3)

Three lectures a week. Prerequisites, Phys. 11 or 21 and Math. 21.

Phys. 104, 105. *Electricity and Magnetism.* (3, 3)

Prerequisites, Phys. 11 or 21 and Math. 21.

Phys. 106, 107. *Theoretical Mechanics.* (3, 3)

Prerequisites, Phys. 51 or consent of instructor.

Phys. 108. *Physics of Electron Tubes.* (3)

Three lectures a week. Prerequisite, Phys. 104. Must be taken previously or concurrently.

Phys. 109. *Electronic Circuits.* (4)

Four lectures a week. Prerequisite, Phys. 105 must be taken previously or concurrently.

Phys. 114, 115. *Introduction to Biophysics.* (2, 2)

Two lectures a week. Prerequisites, intermediate Physics and Calculus.

Phys. 116, 117. *Fundamental Hydrodynamics.* (3, 3)

Three lectures a week. Prerequisites, Phys. 107 and Math. 21

Phys. 118. *Introduction to Modern Physics.* (3)

Three lectures a week. Prerequisite, Math. 21 and Phys. 11 or 21.

Phys. 119. *Modern Physics.* (3)

Prerequisite, Phys. 118.

Phys. 120. *Nuclear Physics.* (4)

Prerequisite, Phys. 118, or equivalent.

Phys. 121. *Neutron Physics and Fission Reactors.* (4)

Four lectures a week. Prerequisite, Phys. 120.

Phys. 122. Properties of Matter. (4)

Four lectures per week. Prerequisite, Phys. 118 or equivalent.

Phys. 126. Kinetic Theory of Gases. (3)

Prerequisites, Phys. 107 and Math. 21, or equivalent.

Phys. 200, 201. Introduction to Theoretical Physics. (6, 6)

Primarily for students planning to do graduate work. Prerequisite, advanced standing in physics and mathematics.

Phys. 208. Thermodynamics. (3)

Prerequisite, Phys. 201, or equivalent.

Phys. 210. Statistical Mechanics. (3)

Prerequisites, Phys. 112 and 201.

Phys. 212, 213. Introduction to Quantum Mechanics. (4, 4)

Prerequisite, Phys. 201.

Phys. 222, 223. Boundary-Value Problems of Theoretical Physics. (2, 2)

Prerequisite, Phys. 201.

Phys. 230. Seminar. (1)

Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One semester hour of credit for each seminar each semester.

Phys. 234, 235. Theoretical Nuclear Physics. (3, 3)

Prerequisite, Phys. 213.

Phys. 237. Relativistic Quantum Mechanics. (3)

Three lectures per week. Prerequisite, Phys. 213.

Phys. 238. Quantum Theory—selected topics. (3)

Prerequisites, Phys. 212 and 236.

Phys. 240, 241. Theory of Sound and Vibrations. (3, 3)

Prerequisite, Phys. 201.

Phys. 242, 243. Theory of Solids. (3, 3)

Prerequisite, Phys. 213.

Phys. 248, 249. Special Topics in Modern Physics. (2, 2)

Two lectures per week. Prerequisite, calculus and consent of instructor.

Phys. 399. Research.

(Credit according to work done.) Laboratory fee, \$10.00 per credit hour. Prerequisite, approved application for admission to candidacy or special permission of the Physics Department.

PSYCHOLOGY

Psych. 1. Introduction to Psychology. (3)

A basic introductory course intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution.

Psychology, Recreation

Psych. 2. Applied Psychology. (3)

Prerequisite, Psych. 1. Application of research methods to basic human problems in business and industry, in the professions, and in other practical concerns of everyday life.

Psych. 5. Mental Hygiene. (3)

Prerequisite, Psych. 1. Introduces the student to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it.

Psych. 21. Social Psychology. (3)

Prerequisite, Psych. 1. Psychological study of human behavior in social situations; influence of others on individual behavior, social conflict and individual adjustment, communication and its influences on normal social activity.

Psych. 106. Statistical Methods in Psychology. (3)

Prerequisites, Psych. 1, and Math. 1, 5 or 10, or equivalent. A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. Majors in Psychology must take this course in the junior year.

Psych. 110. Educational Psychology. (3)

Prerequisite, Psych. 1. Researches on fundamental psychological problems encountered in education; measurement and significance of individual differences, learning, motivation, transfer of training.

Psych. 131. Abnormal Psychology. (3)

Prerequisites, three courses in Psychology. The nature, diagnosis, etiology, and treatment of mental disorders.

Psych. 161. Industrial Psychology. (3)

Prerequisite, Psych. 1. A survey course, intended for those who plan to enter some phase of personnel work, but who do not plan to undertake graduate study.

RECREATION

In addition to the Recreation courses listed below consult the College of Physical Education, Recreation and Health catalog of graduate level courses in the Recreation field.

*For Advanced Undergraduates and Graduates**

**Rec. 120. Program Planning. (3)*

Prerequisite, Rec. 30 or 170. Study of the various aspects, problems and practices of family, agency and governmental recreation programs and their planning, with particular emphasis on playground-community and teen-age center plans and procedures. This course should be of interest and value to those students planning to do part-time summer playground work.

*Note: Starred courses may be taken for graduate credit with permission of the advisor. Students taking 100 level courses will be expected to carry out a special project.

**Rec. 150. Camp Management. (3)*

An advanced camping course for those students with previous training and experience; organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

Rec. 170. General Fundamentals of Recreation. (3)

This course is designed for students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, personality and leadership techniques, organization and administration, and inter-relationships with other fields.

**Rec. 180. Leadership Techniques and Practices. (3)*

A study of the various kinds of levels of leadership exerted by professional and semi-professional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of practical experiences in handling on and off campus groups.

**Rec. 190. Organization and Administration of Recreation. (3)*

A study of the organizational patterns and administrative problems involved in the various kinds of operating recreation groups and agencies; forms of organization; finance and budgets; personnel; areas, facilities, and equipment; public relations.

**Rec. 196. Quantitative Methods. (3)*

A course covering the statistical techniques most frequently used in research pertaining to Physical Education, Recreation and Health Education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

For Graduates

Rec. 201. Foundations of Physical Education, Recreation, and Health. (3)

A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

Rec. 202. Philosophy of Recreation. (2)

A study of the meanings, relationships, and services of recreation as expressed by past and present authorities and leaders. This course should be of interest to people active in education, social work and related fields.

Rec. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)

A study of current concepts, principles and techniques of supervision and their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

*Note: Starred courses may be taken for graduate credit with permission of the advisor. Students taking 100 level courses will be expected to carry out a special project.

Rec. 204. Modern Trends in Recreation. (3)

A study of emphasis and recent developments in the recreation field as a whole and within its various specialized areas, making particular reference to the current and new literature.

Rec. 210. Methods and Techniques of Research. (3)

A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

Rec. 230. Source Material Survey. (3)

A library survey course, covering the total areas of Physical Education, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

Rec. 240. Industrial Recreation. (3)

An introductory study of the philosophy of and practices and problems in industrial recreation. Where possible the course will include opportunities for observation and visiting specialists.

Rec. 260. Hospital Recreation. (3)

An introductory study of the philosophy of and practices and problems in hospital and institutional recreation. Where possible the course will include opportunities for observation and visiting specialists.

Rec. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)

Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisors may register for 1-6 hours of credit under this number.

Rec. 399. Research—Thesis. (1-5)

Students who desire credits for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

Rec. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

SOCIOLOGY

Sociology 1 or Sociology 2 is a prerequisite for all more advanced Sociology courses.

Soc. 1. Sociology of American Life. (3)

Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

Soc. 2. Principles of Sociology. (3)

The basic forms of human association and interaction; social processes; institutions; culture; human nature and personality.

Soc. 52. *Criminology.* (3)

Criminal behavior and the methods of its study; causation; topologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime.

Soc. 64. *Courtship and Marriage.* (3)

A sociological study of courtship and marriage including considerations of physiological and psychological factors. Inter-cultural comparisons and practical considerations. Designed primarily for students in the lower division.

Soc. 71. *Dynamics of Social Interaction.* (3)

Prerequisite, Soc. 1 or equivalent. Social psychology of groups like committees, teams, clubs, sects, social movements, crowds and publics. Origin of the social self; role behavior, intergroup and intra-group relations.

Soc. 105. *Cultural Anthropology.* (3)

A survey of the simpler cultures of the world with attention to historical processes and the application on anthropological theory to the modern situation.

Soc. 114. *The City.* (3)

The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control, and planning.

Soc. 115. *Industrial Sociology.* (3)

The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community and society.

Soc. 116. *Military Sociology.* (3)

The sociology of military life. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military Service as an occupation or profession. Career patterns, problems and satisfactions. Relations between military institutions, civilian communities and society.

Soc. 118. *Community Organization.* (3)

Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects.

Soc. 121. *Population.* (3)

Population distribution and growth in the United States and the world; population problems and policies.

Soc. 123. *Ethnic Minorities.* (3)

Basic social processes in the relations of ethnic groups within the state; immigration groups and the Negro in the United States; ethnic minorities in Europe.

Soc. 131. *Introduction to Social Service.* (3)

General survey of the field of social-welfare activities; historical development, growth, functions, and specialization of agencies and services, private and public.

Soc. 141. *Sociology of Personality.* (3)

Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior.

Soc. 144. Collective Behavior. (3)

Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public.

Soc. 145. Social Control. (3)

Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society.

Soc. 153. Juvenile Delinquency. (3)

Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention.

Soc. 154. Crime and Delinquency Prevention. (3)

Mobilization of community resources for the prevention of crime and delinquency; area programs and projects.

Soc. 164. The Family and Society. (3)

Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present-day trends. Open to upper division students.

Soc. 166. Interviewing and Problem Solving in Social Work. (3)

The principles of interviewing and other diagnostic techniques as applied to social problems with particular reference to family and child behavior.

Soc. 171. Family and Child Welfare. (3)

Programs of family and child welfare agencies; social services to families and children; child placement, foster families.

Soc. 183. Social Statistics. (3)

Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation.

Soc. 186. Sociological Theory. (3)

Development of the science of sociology; historical backgrounds; recent theories of society.

Soc. 201. Methods of Social Research. (3)

Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology.

Soc. 221. Population and Society. (3)

Selected problems in the field of population; quantitative and qualitative aspects; American and world problems.

Soc. 224. Race and Culture. (3)

Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture.

Soc. 255. Seminar: Juvenile Delinquency. (3)

Selected problems in the field of juvenile delinquency.

Soc. 256. Crime and Delinquency as a Community Problem. (3)

An intensive study of selected problems in adult crime and juvenile delinquency in Maryland.

Soc. 262. Family Studies. (3)

Case studies of family situations; statistical studies of family trends; methods of investigation and analysis.

Soc. 291. Special Social Problems. (Credit to be determined)

Individual research on selected problems.

Soc. 399. Research in Sociology. (Credit to be determined)

SPEECH AND DRAMATIC ART

Speech 4. Voice and Diction. (3)

Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1, 2.

Speech 10. Group Discussion. (2)

A study of the principles, methods and types of discussion and their application in the discussion of contemporary problems.

Speech 103, 104. Speech Composition and Rhetoric. (3, 3)

A study of rhetorical principles and studies of speech composition in conjunction with the preparation and presentation of specific forms of public address. Speech 103 is prerequisite to Speech 104.

Speech 105. Speech-Handicapped School Children. (3)

Admission by consent of instructor. The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology.

Speech 106. Clinical Practice (1 to 5 credits, up to 9).

Prerequisite Speech 105. Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, veterans hospitals, and the public schools. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour.

Speech 109. Speech and Language Development of Children. (3)

An analysis of normal and abnormal processes of speech and language development in children.

Speech 112. Phonetics. (3)

Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. Laboratory fee, \$3.00.

Speech 114. The Film as an Art Form. (3)

A study of the motion picture as a developing form of entertainment, communication, and artistic expression. A series of significant American and foreign films are viewed to illustrate the artistic, historical and sociological trends of the twentieth century. Laboratory fee, \$7.50.

Speech and Dramatic Art

Speech 120. Speech Pathology. (3)

Prerequisite, Speech 105. A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. Laboratory fee, \$3.00.

Speech 126. Semantic Aspects of Speech in Human Relations. (3)

An analysis of speech and language habits from the standpoint of General Semantics.

Speech 133. Communication Processes in Conferences. (3)

Limited to students in the Department of Air Science. Prerequisite, Speech 104.

Speech 136. Principles of Speech Therapy. (3)

Prerequisite, Speech 120. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. Laboratory fee, \$3.00.

Speech 149. Television Workshop. (3)

Two hour lecture, four hour laboratory. Prerequisites, Speech 22, 140 or 148, or consent of instructor. Laboratory fee, \$10.00. Advanced laboratory course dealing with all phases of producing a complete television program.

Speech 201. Special Problems Seminar (A through K). (1-3)

(6 hours applicable toward M.A. degree.) A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology or Hearing; K. Minor Research Problems.

Speech 210. Anatomy and Physiology of Speech and Hearing. (3)

A study of the anatomy and physiology of the auditory and speech mechanisms. Laboratory fee, \$3.00.



THE FACULTY

Instructional Staff, All Centers

- FRANK O. AHNERT, *Assistant Professor of Geography*
PH.D., University of Heidelberg, 1953.
- ALFRED H. AITKEN, *Lecturer in Physics*
B.A., Lehigh University, 1949; M.S., Indiana University, 1950; PH.D., 1955.
- ALBERT L. ALFORD, *Lecturer in Government and Politics*
A.B., University of Akron, 1948; A.M., Princeton University, 1951; PH.D., 1953.
- HARRY CLAY ALLEN, JR., *Lecturer in Physics*
B.S., Northeastern University, 1948; SC.M., Brown University, 1949; PH.D., University of Washington, 1951.
- R. F. ALLEN, *Instructor in Foreign Languages*
B.A., University of Oklahoma, 1956; M.A., University of Maryland, 1958.
- ROBERT L. ALLEN, *Lecturer in Economics*
B.A., University of Redlands, 1947; M.A., Harvard University, 1950; PH.D., 1953.
- JOHN F. ALLUMS, *Lecturer in Government and Politics*
B.S., Mississippi Southern, 1933; M.A., University of Iowa, 1937; PH.D., 1940.
- ROBERT J. ALPERIN, *Instructor in Government and Politics*
B.A., University of Chicago, 1950; M.A., 1952; PH.D., Northwestern University, 1959.
- JEAN V. ALTER, *Assistant Professor of Foreign Languages*
PH.D., University of Paris, 1951; University of Chicago, 1958.
- WALLACE L. AMUNDSON, *Lecturer in Education*
B.A., University of Maryland, 1957.
- MALTHON M. ANAPOL, *Instructor in Speech*
B.S., Rutgers University, 1949; M.A., Temple University, 1953.
- FRANK G. ANDERSON, *Assistant Professor of Sociology*
A.B., Cornell University, 1941; PH.D., University of New Mexico, 1951.
- JEREMY H. ANDERSON, *Instructor in Geography*
B.A., Yale University, 1956; M.A., University of Washington, 1959.
- NANCY P. ANDERSON, *Instructor in Psychiatric Nursing*
B.S., University of Maryland, 1954; M.S., 1957.
- THORNTON H. ANDERSON, *Associate Professor of Government and Politics*
A.B., University of Kentucky, 1937; M.A., 1938; PH.D., University of Wisconsin, 1948.
- MARY L. ANDREWS, *Assistant Professor of English*
B.S., New York University, 1929; M.A., 1935; PH.D., 1941.
- JAMES W. ARMACOST, *Assistant Instructor in Speech*
B.S., University of Maryland, 1956; M.A., University of North Carolina, 1959.

Faculty

ROBERT J. ARMS, *Lecturer in Mathematics*

B.A., University of Saskatchewan, 1949; M.A., 1951; PH.D., Queen's University, Canada, 1955.

GEORGE T. ARTOLA, *Lecturer in Foreign Languages*

B.A., Brooklyn College, 1941; M.A., Johns Hopkins University, 1950; PH.D., 1953.

WILLIAM A. ASTIN, *Assistant Professor of Psychology*

A.B., Gettysburg College, 1953; M.A., University of Maryland, 1956; PH.D., 1958.

JOHN P. AUGELLI, *Professor of Geography*

B.A., Clark University, 1943; M.A., Harvard University, 1949; PH.D., 1951.

FRANK P. AVONDA, *Assistant Professor of Chemistry*

B.S., The College of the City of New York, 1948; A.M., Columbia University, 1949; PH.D., The Ohio State University, 1953.

THOMAS J. AYLWARD, *Assistant Professor of Speech*

B.S., University of Wisconsin, 1947; M.S., 1949; PH.D., 1960.

EUGENE H. BACON, *Lecturer in History*

A.B., Loyola College, 1947; M.A., Georgetown University, 1949; PH.D., 1951.

J. DOUGLAS BAIRD, *Lecturer in English (Europe)*

B.A., University of British Columbia, 1924; S.A., 1925; PH.D., University of Washington, 1952.

JAGJIT S. BAKSHI, *Assistant Instructor in Mathematics*

BACCALAUREATE A.S., College Khanna, 1952; M.A., Government College Ludhvari, 1955.

HARRY BARD, *Lecturer in Education*

B.S., Johns Hopkins University, 1929; M.A., Columbia University, 1938; ED.D., University of Maryland, 1951.

JACK C. BARNES, *Assistant Professor of English*

A.B., Duke University, 1939; M.A., 1947; PH.D., University of Maryland, 1954.

JOHN M. BARR, *Lecturer in English (Far East)*

B.A., University of Missouri, 1948; M.A., University of Stockholm, 1949.

CHARLES E. BARRETT, *Instructor in Economics*

A.B., Loyola College, 1942; M.A., University of Maryland, 1950.

HOWARD S. BASS, JR., *Lecturer in Business Administration*

B.S., Virginia Military Institute, 1951; M.B.A., Harvard University, 1957.

EDMOND W. BASTEK, *Lecturer in Military Studies*

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BALTIMORE DIVISION HEADQUARTERS

The building in the background houses the Baltimore Division offices of University College, corner of Lombard and Greene Streets, Baltimore. At left is the historic Medical Building, erected in 1812, the original building of the University of Maryland Medical School.



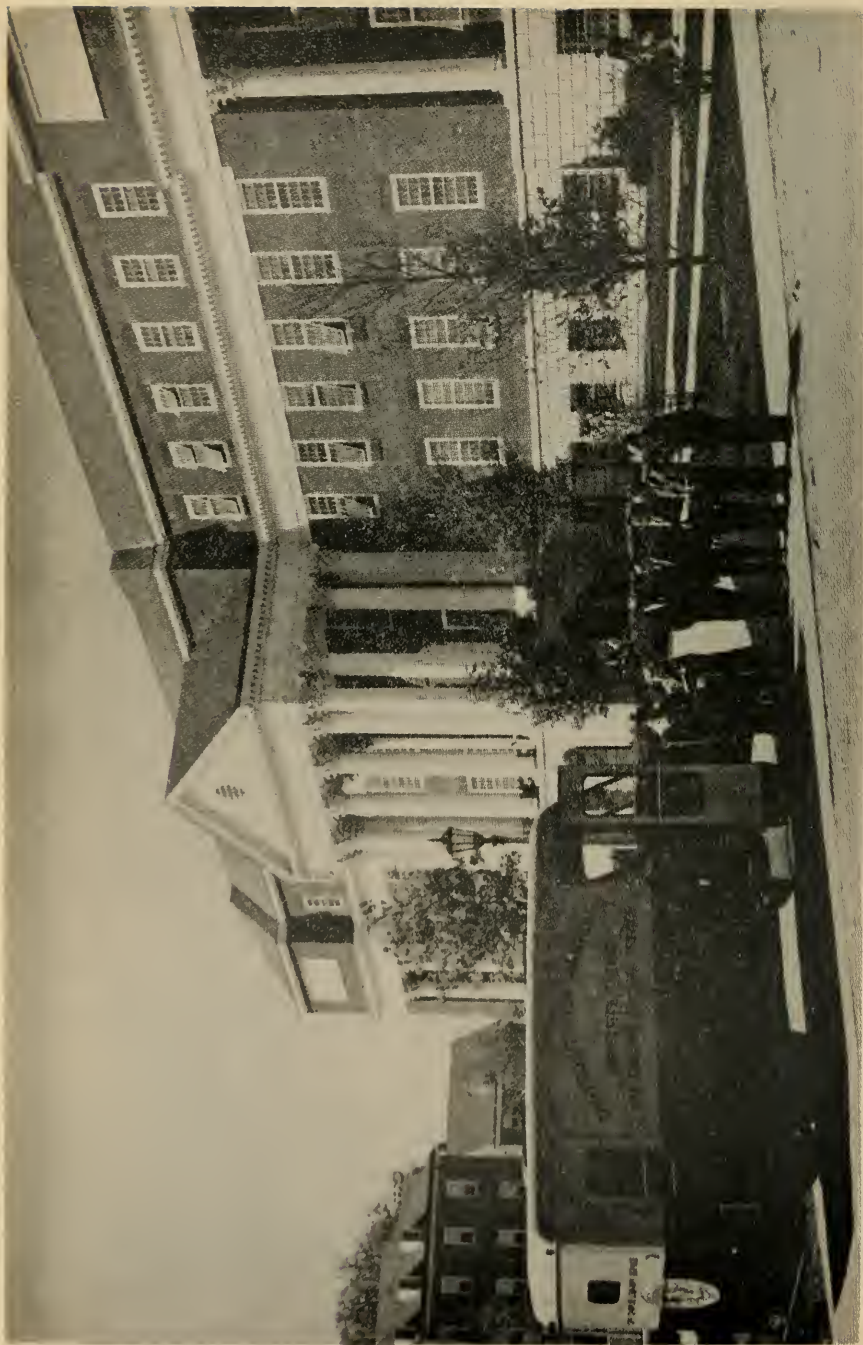
EUROPEAN CLASS FIELD TRIP

Students from a Maryland economics class at Fontainebleau, France, concentrate their attention as an IBM engineer describes intricate electronics equipment in the new factory of International Business Machines at Corbielle—Essonne.



FAR EAST CLASS TOUR

Members of a University of Maryland Military History class intently observe communist lines from a vantage point at an American observation post on the edge of the demilitarized zone between North and South Korea.



LIBRARY ON WHEELS

University College's mobile library unit makes library services available to off-campus students in the Washington-Baltimore area.

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